

MOTOR AGE

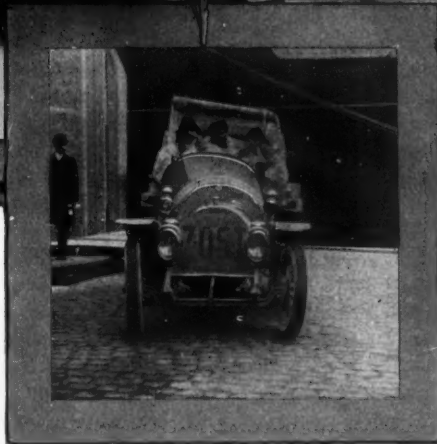
WORLD'S RACERS REACH FRENCH METROPOLIS



THOMAS FLYER, AMERICA'S ENTRY

CHICAGO, July 29—The Protos, the German entry in the New York-Paris race, was the first car to reach the French metropolis, but under the rules of the race it is not the winner of the globe-girdling stunt, that honor belonging to the Thomas Flyer, America's entry, by virtue of the 30 days' allowance made because the Protos was shipped by rail from Pocatello, Idaho, to Seattle and from there by steamer to Vladivostok, thus dodging the trip to Alaska and the journey through Japan. The Protos reached Paris Monday night and it was expected the Thomas would get there tonight.

Dispatches received by the New York Times from its staff correspondent on the American car tell of their successful arrival at Berlin after an uneventful run over one of the most magnificent stretches of highway that they had encountered in the whole of the race. During the last stretch to the German capital, between Koenigberg and Berlin, the Thomas was lost to sight, and as no bulletins were sent ahead, the arrival of the American car in Berlin was entirely unannounced. It did not take long for the population to discover its presence, however, one of the first to greet Schuster being Colonel Koeppen, the white-haired father of the German lieutenant who successfully piloted



ZÜST OF ITALY

the Protos into Paris Monday evening. The news of the German's successful ar-



LIEUTENANT KOEPPEN OF THE PROTOS

PROTOS, GERMANY'S REPRESENTATIVE

rival at the French capital did not disturb the American crew in the slightest, and but for the fact that both Schuster and Miller are practically worn out with the constant strain of night and day driving, they would have kept on at the same pace to the city of Paris.

The silent and unannounced entry of the Thomas into Berlin brought forth profuse apologies and regrets from the German motoring fraternity there, as had the car's coming been made known in advance, there would have been an escort to meet them some distance out of the city, and a formal reception. Count Sierstorpf, president of the Imperial Automobile Club, and Rudolf Ullstein, one of the four brothers who own the Zeitung am Mittag, the German daily which backed the Protos car in the race, took Schuster and his fellow travelers in hand and tendered them a breakfast at the Fuerstenhof hotel, while the sight of the car over which the stars and stripes waved attracted a vast assemblage before the hotel. The appearance of any one of the crew of the American car was the occasion for a great demonstration and dozens of enthusiastic Teutons rushed forward to shake hands with him, Schuster cabling that the Germans displayed the most generous and sportsmanlike feeling toward them.

In fact, from the moment the American car raced across the Russian frontier into Germany, there has been the most marked



SCHUSTER AND HIS MATES ALMOST SLIDE DOWN RAILROAD EMBANKMENT

difference in the spirit of the greetings, a small group of peasants at Eydtkuhn sending up the first real cheer that the Thomas crew had heard since leaving Japan. The sight of the American flag seemed to arouse the greatest enthusiasm.

Spanning a time period from February 12 to the end of July and arousing the motoring critics of two hemispheres into enthusiastic praise of drivers and machines, the New York-Paris racing machines have created a series of chapters in motoring that not only are novel, new and thrilling, but they have breathing through them all the slogan, "the world needs more good highways." Whether or not it was Fate or simply an inspiration that prompted E. R. Thomas, the Buffalo manufacturer, to name a stock roadster for this test which no other American maker seemed to care to do, the fact remains that millions of people who previous to last February had not heard of this make of car now have an exalted opinion of not only the machine but its plucky drivers as well.

The story of the trip, for at least three of the original six entrants, from the sun-

light and gayety of Times square, New York city, through the arctic wilds of the Empire state, over the rutty roads of Ohio and into the unprecedented blizzard-ridden Indiana, thence on through the mud of Iowa, the alkali of Nebraska and Wyoming, the spring floods in the Wasatch range of the Rockies, the awful silence of the Utah deserts, the parched plateau of the Goldfield district, the menacing grandeur of the treacherous Death valley and up through the dust of California, through San Luis Obispo and the triumphant entry of three of the cars into San Francisco, the passage to Seattle and the lonely but demonstrative trip of the Thomas car into the snow-bound and rocky trails of Alaska—a futile sticking to the original route that contemplated motoring north of the arctic circle where no wheeled vehicle ever had gone in the memory of white man, Indian or Eskimo—the runaway confederacy of the foreign cars across the Pacific ocean to the Orient in an effort to get away from Vladivostok, Siberia, ahead of the Thomas machine; the pluckiness of the crew of the latter in hastening to Japan, crossing the big island and arriving

in Vladivostok in time to make it an even race with the Protos and Zust, and then the most marvelous narrative of motoring the world has ever known—the story of crossing Siberia, the Ural mountains, flying through Russia and the German empire and the grand climax of the run through France and into Paris many days after the scheduled Independence day en-



THOMAS AND CREW ABOARD A JAPANESE SAMPSAN

RECORD OF THE SIX CARS COMPILED BY

THOMAS		Miles
New York, Feb. 12.....		0
Buffalo, Feb. 16.....		473
Toledo, Feb. 18.....		314
Chicago, Feb. 25.....		276
Left Chicago, Feb. 27.....		—
Cedar Rapids, March 1.....		221
Omaha, March 4.....		273
Cheyenne, March 8.....		550
Ogden, March 15.....		484
Tonopah, March 19.....		473
Bakersfield, March 22.....		486
San Francisco, March 24.....		318
Left San Francisco, March 26.....		—
Seattle, April 1.....		—
Valdez, April 6.....		—
Kobe, May 13.....		0
Trumza, May 15.....		120
Vladivostok, May 19.....		0
Left Vladivostok, May 22.....		—
Chita, June 17.....		1,420
Tomsk, June 27.....		1,950
St. Petersburg, July 23.....		2,630
Berlin, July 27.....		1,015
Paris.....		733

PROTOS		Miles
New York, Feb. 12.....		0
Buffalo, Feb. 17.....		473
Toledo, Feb. 22.....		314
Chicago, March 3.....		276
Left Chicago, March 6.....		—
Cedar Rapids, March 10.....		221
Omaha, March 18.....		273
Cheyenne, March 22.....		550
Ogden, April 3.....		484
Took the train to Seattle.....		—
Left Seattle, April 19.....		—
Vladivostok, May 10.....		0
Left Vladivostok, May 22.....		—
Chita, June 16.....		1,420
Tomsk, June 26.....		1,950
St. Petersburg, July 22.....		2,630
Berlin, July 24.....		1,015
Paris, July 26.....		733

SIZAI-NAUDIN		Miles
New York, Feb. 12.....		0
Red Hook, Feb. 14.....		98
Quit race at Red Hook.....		—



AMERICAN PASS REPRESENTATIVE MODE OF TRANSPORTATION IN SIBERIA

try that the Thomas people figured upon when far in the lead of all competitors into the city of Chicago—it remains for the men who sat at the wheels during these weary months to properly tell this tale to the motoring public.

From Montague Roberts, the shrewd knight of the wheel who took the Thomas from New York to Cheyenne, turning over

the car to little George Schuster the critics had this prophecy in the banquet hall at the Chicago Automobile Club: "Whatever length of time it takes to accomplish this awful task—and I am sorry that it is not given to me to hold the wheel all the way—you may depend upon it that the American flag will go farthest on the original route and by reason of this will win the premier honors. I know that the men who look upon this as a command to take Old Glory farther than the French or German flag will go, will do their task if it takes 3 years."

And Old Glory trailed behind the Thomas into the French capital, winner over all the national emblems by the terms of the Parisian committee's rules governing the endurance competition.

After Marquis de Dion, experimenter in long distance motoring in the Pekin-Paris race, had given Europe his hasty decision that the New York-Paris race over the Alaska-Arctic Ocean-Irkutsk-St. Petersburg-Paris route was impracticable, he was urged by telegraph by a Norwegian soldier of fortune then in the employ of the Russian government, Captain Hans

Hensen, to make the effort, the Norwegian volunteering to go to Paris and show the French manufacturer how easily the job might be done. His experience of many years north of the arctic circle, he said, taught him the practicability of the run. But he had never been in Alaska and there is where he erred. The marquis was persuaded that the trip could be made and promptly named his de Dion car, with St. Chaffray, Autran and Hensen as his crew and sent the car to New York. A confederacy in France backing the Motobloc car, engaged Baron Charles Godard to pilot that machine. Maurice Livier, a motion picture expert from Paris, and Arthur Hue, a mechanic, were detailed to make the run. This car, with the 15-horsepower Sizaire-Naudin, also of French make, and weighing only a little more than 3,000 pounds, or half the weight of each of the other French cars, was sent to New York. The Italian Zust, with Emilio Sirtori, an experienced globe-traveled driver at the wheel, and Antonio Scarfoglio, an Italian poet and writer, and Henri Haaga, an expert mechanic, and weighing one-half the amount of the French machines, also

IN NEW YORK-PARIS RACE

EMANUEL LASCARIS

ZUST	Miles
New York, Feb. 12.....	0
Buffalo, Feb. 17.....	473
Toledo, Feb. 19.....	314
Chicago, Feb. 26.....	276
Left Chicago, Feb. 28.....	
Cedar Rapids, March 2.....	221
Omaha, March 7.....	273
Cheyenne, March 12.....	550
Ogden, March 23.....	484
Tonopah, March 28.....	473
Bakersfield, April 1.....	486
San Francisco, April 4.....	318
Left San Francisco, April 10.....	—
Seattle, April 12.....	0
Yokohama, April 30.....	0
Left Yokohama, May 6.....	
Trumza, May 12.....	500
Vladivostok, May 15.....	0
Left Vladivostok, June 5.....	
Trkouts, July 9.....	1,979
Tomsk, July 22.....	1,391

DE DION-BOUTON

	Miles
New York, Feb. 12.....	0
Buffalo, Feb. 16.....	473
Toledo, Feb. 18.....	314
Chicago, Feb. 26.....	276
Cedar Rapids, March 2.....	221
Omaha, March 14.....	273
Cheyenne, March 22.....	550
Ogden, March 26.....	484
Tonopah, March 30.....	473
Bakersfield, April 3.....	486
San Francisco, April 7.....	318
Seattle, April 13.....	
Yokohama, April 30.....	0
Left Yokohama, May 6.....	
Trumza, May 12.....	500
Vladivostok, May 15.....	
Out at Vladivostok. Sold and sent to Pekin.	

MOTOBLOC

	Miles
New York, Feb. 12.....	0
Buffalo, Feb. 18.....	473
Toledo, Feb. 22.....	314
Chicago, March 2.....	276
Cedar Rapids, March 13.....	221
Carroll, March 17.....	120
Took train to San Francisco; arrived March 24. Sold there.	



CROSSING TEMPORARY TRACKS ON HAND CAR IN JAPAN



ONE OF THE MANY BAD ROADS ENCOUNTERED IN SIBERIA

was nominated. Lieutenant Koeppen, of the German imperial army, and Hans Knape and Ernst Maas, non-commissioned officers of the army, one of them in the engineering department, backed to a certain extent by a Berlin paper and with a fund of \$10,000 subscribed by themselves, also essayed the trip. The Thomas car, of 60 horsepower, four cylinders and chain-drive, weighing 3,600 pounds without extra equipment which was taken on after leaving the United States, had a crew of Montague Roberts, George Miller and George Schuster in this country, later taking on Captain Hensen, who quit the de Dion crew in Chicago.

The start was made from New York with weather propitious on February 12, but not many miles out toward Poughkeepsie the Sizaire-Naudin car gave up the attempt because of a broken differential. The contest through snow and blizzards across New York state was one of thrills and daring, most of the drivers following paths along the Erie canal when they found the roads too heavy for pleasant going.

In the course of a few days—longer than the usual touring schedule—the cars were well into the rutty and frozen roads of Ohio. Just then the worst blizzard of the winter, or for many winters, wrapped Indiana in a white mantle that for nearly 2 weeks kept the motorists busier than they expected to be in Siberia. Into South Bend, after almost herculean efforts, the Thomas car led the way and then broke its weary path up to Michigan City. The farmers who were hired to haul the cars out of deep drifts made a harvest off not only the Thomas car but the Zust and de Dion. Later and so late that the car was given no serious standing in the race the Motobloc literally “waded” through the slush that had been deep snow when Montague Roberts piloted the Thomas Flyer through. The best laid plans of many men to point out a shorter and better route from Michigan City to Chesterton, failed and the Thomas lost more than a day within a short distance of the Chicago goal. The German car broke down badly—almost hopelessly—and Lieutenant

Koeppen, coming to Chicago, met a friend in need and friend indeed—Carl Metzger, of the Woods Motor Vehicle Co., the latter subsequently almost rebuilding the machine in its Chicago shops and permitting the German to almost cross the continent before his car again gave way. The de Dion, through a bit of perverse driving in a deep drift in Indiana, broke a gear-shaft and all of its transmission was brought to Chicago by Autran, where the Frenchman, finding a countryman who knew the car, had a new shaft turned.

Chairman A. J. Banta, of the Chicago Automobile Club's runs and tours committee, and many other motorists from the Chicago Motor Club, made several trips into Indiana and finally escorted all of the racers into Chicago—the Thomas having a big lead. The Italians, full of hope and sportsmanship, came second and then the de Dion and finally the solid-tired Motobloc with its axles badly bent and the car showing the effects of a terrible trip.

The progress of the Thomas Flyer west of Chicago over a route that as far as Cheyenne was well mapped out by Banta bristling with enthusiasts who volunteered to pilot the racers, was a succession of days of adventure, accidents, daring climbs, ovations and masterful driving. The other contestants, with the exception

of the Motobloc, which gave up the race out in Carroll, Ia., participated in the same general program. In Iowa the heavy de Dion met with many delays from broken parts. But the Union Pacific shops at Omaha and later at Ogden were turned over to the mechanics with plenty of help, and repairs were made with dispatch.

After leaving Cheyenne and with Schuster at the wheel the American car performed prodigious feats in the passes and on snow ranges. The natives had never heard of anything like it. Crossing a river on the ice after negotiating high banks, taking dark tunnels and running across dangerous railroad bridges on the ties, the Thomas led into Utah, around Great Salt Lake and down into Nevada. Accidents there caused a delay of 2 days. But the marvelous driving of Schuster and the inherent strength of the car enabled him to surmount mountain, pass, freshet, desert, plateau, tropical heat in the sunken valleys and the dust of California roads and give the American car a lead of 9 days over the Zust into Frisco.

The mountain passes and deep gorges were too much for the German car, which shipped to Pocatello, Idaho, after a vain effort on the part of Lieutenant Koeppen to get spare parts from Seattle. Later this car was shipped by train to Seattle to sail with the Thomas car to the Orient.

There was great joy in the American camp when the Thomas car sailed for Seattle and that latter city was en fête when the car was shipped to Alaska, for the port of Valdez, to make for the Yukon and continue to Nome. After a stormy trip the Thomas Flyer reached Valdez and the crew was informed that 30 miles out the trail passed over the range and was only 52 inches wide—nothing but dog sledges with the mails and supplies ever essayed this trip. A slip off the ledge into a valley filled with snow might mean the death of the crew and the destruction of the car. Inasmuch as the latter required at least 6 feet of trail to pass the mountain roads, the trip was abandoned and in sorrow the American crew returned to Seattle. Many days were lost—the car might



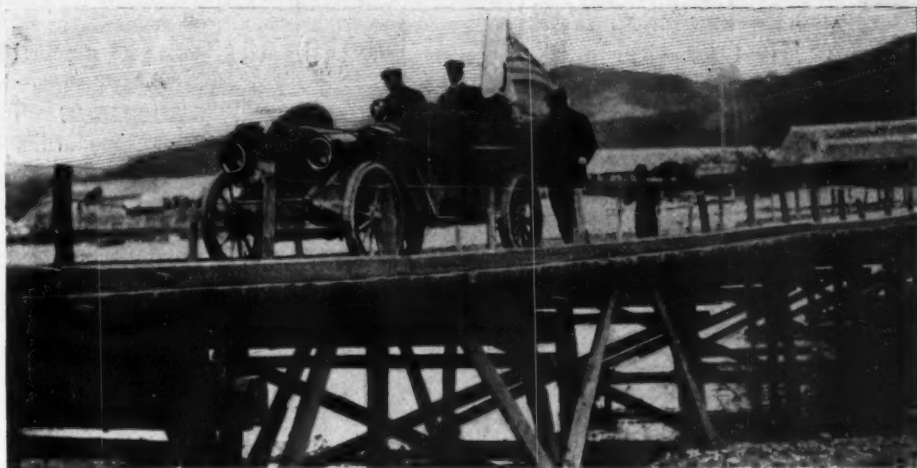
THOMAS FLYER STRUGGLING THROUGH JAPAN

have been well on its way to Vladivostok, whence the new route across Asia was to start as per the agreement of the Paris committee.

But this long stay in Alaska was a detriment to the Americans. The Frenchmen, Italians and Germans left for the Orient before the Thomas car would catch the Japan steamer. The spirit of fair play actuated the Paris committee. After withdrawing the original trophy for the Siberian-American-Russian run and substituting a cash prize, the committee cabled the foreign cars to remain at Vladivostok until the American machine crossed Japan and shipped across the seat that was made famous by the greatest naval battle of modern times.

E. R. Thomas claimed the race, as his car had gone farthest on the original route. The Parisians, side-stepping, did the next best thing—recognized the justice of his claims about lost advantages and ordered the Protos car, graciously permitted to continue in the contest despite the cutting off of more than 1,100 miles of United States racing, to take a 30-day penalty over the American car. The Zust and de Dion were penalized 15 days each. De Dion cabled the official withdrawal of his car and it was shipped to Paris by train. Emmanuel Lascaris, a Chicago Motor Club member, who had succeeded Captain Hensen in the crew at Chicago, continued with Autran by train to France and later returned to Chicago. The difficulties confronting the American car in Siberia began at once with a shortage in the supply of gasoline, cornered by St. Chaffray, who wished to force Driver Schuster to carry him to Paris as a passenger on the American car for uncovering the cornered supply of gasoline.

Manchurian and Siberian roads—the post road especially—were found to exist only in imagination. The Protos overturned in a mud hole, the Thomas car sank almost out of sight in a swamp and later lost its way. The Zust, as Scarfoglio cabled, found terrors that made Indiana trouble look like miniature tribulations. Still through mud and slush the



CROSSING A BRIDGE OVER RIVER NEAR SHINTO, JAPAN

cars rushed to Hartin, the race developing soon into a struggle of endurance between the Protos and Thomas only. The Protos, helped by the army officers and with two shifts of drivers, enabling the car to proceed by day and by night, led into Chita, 1,420 miles from Vladivostok, and made the trans-Baikal ferry 3 hours ahead of the Thomas car, necessitating a long delay by the latter because the boat officials would not wait long enough to load another car. But at Irkutsk the cars were together, the Thomas leaving 15 hours after its German rival. Then followed a desperate race—to Kansk, to Obi, and to Omsk, the driving of Schuster finally bringing him on even terms with the German. The latter, after being raced for hours, turned out of the road and permitted the American car to push on to Oufa and the Urals.

When a commanding lead seemed imminent, the Thomas car was piloted over a cane brush road in a swamp and sank, the shock breaking some teeth in the driving gear. Delay, delay and delay!

Miller with the rough tools at his command in a village blacksmith shop repaired the teeth, the forgings sufficing to take the car over the Ural mountains and into Russia. Viatka was reached, but no repairs were found along the railroad.

Day after day the car remained helpless on Russian soil while Schuster made trips to the railroad towns. The Protos caught up, reached Moscow first and then was given a great reception in St. Petersburg. It was not until July 23 that the Thomas car pulled into the Russian capital, the crew so humiliated over the sacrifice of time that Schuster was almost heart-broken over the delay.

The triumphant entry of the German car into Berlin on July 22 was the signal for much elation among the Germans and banqueting for Lieutenant Koeppen. Entering Paris on July 25 the Protos was given a few cheers by the boulevardiers, but the latter were well aware that the first car to arrive was not the winner of the premier honors—that the Thomas car following closely, after conquering almost insuperable obstacles, would be the winner. When the Thomas car reached Berlin on the morning of July 27 Paris warmed up to the coming entry. Dashing away from Berlin in the evening after a day of pleasing receptions to the Americans Driver Schuster made haste to finish the last lap of the 21,080-mile race. The journey to New York to complete the circle of the globe, remains as a mere formality. The Zust car is so far behind in Russian territory that only Philosopher Scarfoglio can extract any inspiration from the tail-end chase in the world-girdling race.

A strong moral is pointed by the many useless hours of foraging for gasoline and oil—even food—by the American crew in Siberian and Russian territory, where both fuel and spare parts should have been cached or provided for. Someone blundered abroad—but the critics are unanimous in saying that everybody blunders over there. If another around-the-world race is scheduled the owners of the competing cars will profit by the lesson of the Siberian blunders. But for the latter and with only a reasonable schedule, Schuster, driving not more than 10 hours a day, the American car should have entered Paris in the lead about July 24, as he cabled from the first Russian point on the Ural slopes he expected to end his trip on that day.



THOMAS HELPS PULL PROTOS OUT OF THE MUD IN SIBERIA

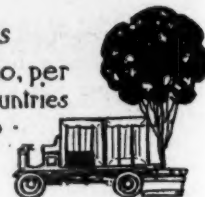


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A TOUR THAT DEMONSTRATED



WHEN twenty-eight motor cars out of forty-six can travel 1,675 miles in 12 days, observing a schedule that demanded much over roads fluctuating suddenly from excellent to vile, and receive attention from driver and mechanic limited to the use of parts carried on the vehicle, the percentage of clean score finishers supplies a demonstration of the American motor car that should be acceptable even to those few skeptics who have been waiting for public proof that the new means of individual transport had reached that stage of perfection which would commend it to all as reliable and assured for short and long hauls over the highways.

Surely even the most exacting could not ask anything more convincing than what was accomplished by the cars participating in the "fifth annual reliability touring contest" of the American Automobile Association, and it should be here mentioned that, besides the perfect score brigade, the survivors of the hardest test ever asked of motor-driven vehicles, either here or abroad, include others which fell short of a clean score record by margins so scant that they are entitled to almost equal credit. When one adds a half dozen official and press cars which practically duplicated what had been done by the contestants, the reliability showing gains more in the fullness of the measure.

Motor endurance runs are sporting propositions only in a minor sense, and the general public is mainly interested in being informed as to what cars have met the extraordinary touring conditions called for. If more than one car answers these requirements, the interest of the motor buying public is that much increased, for the greater number of clean score participants—providing the contest is one really deserving of the name—makes evident the reliability of motor cars as now produced.

It is a fact, however, that a certain percentage of the public are particularly interested in any sort of a contest, human or mechanical, or combining both, and to satisfy these it may or may not be advisable, according to the viewpoint, to continue a motoring endurance race until a winner is evolved for any trophy which may be offered.

If independent owners, for their own sporting amusement, were the only entrants in motor contests of a reliability nature, and insistent upon a fight to a finish, a single winner would be a natural sequence. But it is the makers themselves who now pay the heavy bills, and, having

met the extraordinary touring conditions by participating in a reliability contest, they are entitled to a reasonable amount of unquestioned publicity for having successfully passed the mechanical examination of their motor cars.

Therefore, while it might be a matter of interest in some quarters, it would seem that it really mattered little whether or not the tie was decided in the matter of holding the Glidden trophy, for, if no club team won it, it naturally reverted to the A. A. A. touring board, to be held until the contest of another year. To have penalized a car at the conclusion of the tour because it checked in a minute earlier than it was required to do would have been action somewhat unusual when all attendant circumstances explained elsewhere were taken into consideration. The most scrutinizing discoverer of technicalities might so rule, and he would find those who agreed with him. But a common sense interpretation of the incident would not have blackened the otherwise faultless mechanical record of the car for such a palpable and indirect error in mathematics, which, if it gained nothing for the car, certainly should not have counted against it. It might be said, however, that a rule of this indefinite sort might better be left out of any future conditions.

If winners must be had at the conclusion of endurance runs, they can be more sensibly obtained by an examination of the cars, letting general conditions decide any ties which may exist.

LESSONS OF THE GLIDDEN



ALTHOUGH Charles J. Glidden's brief telegram to President Hetchkiss at the completion of the Glidden run consisting of four words—"admirably planned, masterly executed"—sums up truly and concisely the work of Chairman Frank B. Hower and his able staff, a few shortcomings in the rules were apparent. These weak points were due directly to those who passed upon the final draft of rules and not a few makers had a look in, thereby clearing the touring board directly of the onus. But two changes were really imperative: First, the contestants should have been taxed for all work done on their machines instead of just for parts replaced; and second, at the completion of the run, there should have been a careful inspection of car parts to discover what ones were broken, impaired or lost and a commensurate penalty imposed for each discovered defect. Added to these two improvements is a third, namely, a

more even adjustment of penalties between a point a minute for being late in checking into a night stop and a point a dollar or fraction thereof for parts replaced. A further inconsistency was permitting the use of regular spare parts without penalty and charging for extra spare parts. Disqualification for use of spare parts not carried on the car from the start of the tour should be eliminated.

Chief of these defects is permitting work to be done without penalization. One car welded a spring leaf twice; three others broke rear axle truss rods and made new ones; four contestants took their radiators off a couple of times and soldered them; one entrant took his front axle out, reformed it in a blacksmith shop and later improvised a truss rod for it which allowed it to reach Saratoga free from penalty as far as that member is concerned; other cars broke shackle pins and made new ones—all without penalty. These cars should not have finished with perfect scores like those cars that did not break a part, did not manufacture a new part and did not make an adjustment.

A final examination should have been made and penalties imposed. Three cars finished with defective oiling systems; so defective that oil had to be poured into the motors every 10 miles. Four cars at the finish had radiators leaking so badly that during the last day's run stops were made every 9 miles to fill up. One or two teams had brakes that were almost useless, and very dangerous. One had a broken exhaust manifold. In spite of these broken parts the cars checked in with perfect scores and to the great public appear as clean as some others that finished without a defect. This is not right. The condition a car is in at the end of a 1,700-mile contest is of equal if not more importance than its performance on the run.

In a 1,700 or 2,000-mile tour penalties should not be imposed for such adjustments as brakes, carburetor and ignition parts because with the most careful driving climatic and other conditions have not a little to do with these. Daily adjustment of brakes is too frequent; so is such adjustment of carburetor and coil, but a weekly or semi-weekly attention to these parts by way of adjustment only should be permitted. Proper lubrication at all times should be allowed, but insistency should be made on lubricator capacity for at least 150 miles. Nothing is more disagreeable than to have to stop every 50 miles to oil up and fill the lubricator. The small mechanical oiler should be more than doubled in size and special tanks should be fitted to carry 2 or 3 days' oil supply.



CURRENT COMMENT



ONE of the greatest lessons learned by tourists in the recent Glidden contest was the lack of adequate equipment in the ordinary touring car as shipped from the factory. As it is dispatched to the agent, the branch or the buyer, many detail parts needed in every-day touring or country traveling are wanting. If they were present the result would vastly increase the pleasure of motoring. Most deplorable in many cars is the dearth of adequate oiling facilities, such as compression grease cups and oil ducts, so that when the oil has passed through a bearing it is drained back to some reservoir instead of being allowed to drip onto other parts of the chassis, later into the mud apron and finally onto the ground, whence it arouses the street and highway commissioners because of the damage it works to certain kinds of roads. Not a few cars show leaks from every one of the transmission bearings; leaks from the end bearings of the crankcase are common; and often the spokes of the back wheels are oil-spattered because of the inadequate oil-retaining means within the back axle.

A maker should bear in mind in fitting out a car that four enemies are to be kept out of the machinery and one friend admitted and constantly retained. The four enemies to be watched for are: Dust, mud, water and stones, and the one friend is oil. Dust, mud and water can be kept out by a score of little means. Where coil boxes are carried on the dash, waterproof covers are a valuable addition and can be used without interfering with the access to the coil. The steering parts can be incased in leather boots, these keeping out the mud and water and retaining the oil. Magneto covers are essential, though rarely fitted on many cars of good reputation. Special radiator mud aprons are noted on the majority of cars contesting in the Glidden, but it is surprising to know that very few of the makers supply these as regular equipment. Leather boots for spring shackles in the case of platform springs could be used to great advantage but scarcely an example of them is seen; on the contrary every spring shackle is covered with oil and dust and makes the running gear of the car a sorry sight. There is absolutely no necessity for the oil-bespattered running gear or motor; it can all be avoided by introducing a little art into the design of the lubricating scheme and not thinking that when an oiler with oil leads is attached that the entire lubricating means is solved. This is but half the task; the getting of the oil to the desired point is one problem and the getting of it away from this point

when its usefulness is exhausted is another. Both are problems that must be squarely met in the make-up of a satisfactory oiling system.

Not alone in this respect but in many others is the standard car lacking. Scarcely a car is sent out from the factory with means provided for carrying a gallon can of oil; when it has to be carried it is thrown in the bottom of the tonneau where, if, as it sometimes happens, the can is punctured, the oil floods the tonneau floor, converting what should be a model of cleanliness into a bed of grime and grease. Each car should have on its running board or in some other convenient place accommodation for 1 or 2 gallons of oil, where it will be by itself and where it will be impossible for it to get on the clothing or robes.

Many makers talk about the card cases, the mirror equipment, the toilet case holders and a dozen other luxuries that are rarely needed and when furnished are seldom used; instead of wasting energy in this respect those makers should arrange for the daily necessities of touring. It is surprising why makers do not do this, for when they fix their cars up for the Glidden they add almost a score of these little things that go to make up the touring enjoyable. What is needed for the Glidden is no more than needed for a week tour made in any state in the union. Many makers declare they must refill the oiler every 50 or 100 miles; oil must be carried to do this and why, then, should not provision be made for carrying this oil instead of mixing it up with the tools, the battery box or the tonneau?

ALL of the 200 Glidden tourists had in their 1,700-mile run a good opportunity of observing what six eastern states are doing in the cause of good roads as well as being privileged to casually observe the right and the wrong of road architecture. Of the 1,700 miles covered perhaps 500 miles is improved or macadam roads and the remainder semi-improved highways, virgin trails or mountain passes. No state offers more in the way of the improved macadam highway than Massachusetts with its state area not more than 90 miles in height by 200 miles in length east and west. Within this small area are 300 miles of state roads, all built since 1903, when the good roads movement took on tangible form. These roads approximate in cost \$4,000 per mile, one-half of which is paid by the state, the other half by the towns en route. All of the improved Massachusetts state roads are trunk lines, many of

which radiate from Boston and reach to the state boundaries.

The state highways of Massachusetts are recognized by the motorists the moment they are reached. The roads are not long, endless ribbons of macadam wide enough for two teams to travel comfortably abreast; rather, they indulge in interminable windings and meanderings among farm lands and forest. Fences are wanting throughout the majority of their length, but where there is the slightest embankment the entire stretch of road so constructed is bordered close to the roadway by a white pole fence about 4 feet high and having a top well-dressed pole 4 inches to the side, and a 2 by 6-inch board midway the height of the post. At every bridge approach this white fence is present, and wherever a bad curve is, big well-made signboards are posted. The roadbed is as carefully looked after as that of our biggest transcontinental railroads and the fences and signals are par excellence. These Massachusetts roads were designed and built upon a system, and will endure. Every foot of them carries the imprint of system and permanency, and are a decoration to the state.

In glaring contrast with these highways are miles and miles of the improved macadam roads of Pennsylvania in the mountain and foothill regions. The water-breaker is their sole remembrance. For miles the surface is good, hard white macadam, but it is punctuated regularly at every telegraph pole with a water-breaker of from 1 to 2 feet in height. These relics of barbarism or modern obstinacy have no legitimate excuse for existence. They are designed to arrest the flow of water down the center of the road, and so preserve the road surface. They succeed in this mission, but a similar success could be achieved by a well-crowned roadway with suitable gutters at the sides. Certain mountain roads are crossed by these waterbreaks every 40 feet and breakers 3 feet in height have been encountered.

Breakers of this nature impede the average progress of mountain transportation, which is at best very slow. The four and six-team lumber wagons stop at nearly every breaker. The driver almost falls asleep during his snail-like progress, during all of which time the slow pace is eating into the owner's profit. Hundreds of thousands of dollars are lost annually to the state of Pennsylvania because of its water breakers and its poorly improved road system. But the macadam light is shining; the steam roller and road-making brigade are entering the country and in a decade the results will be apparent.

GLIDDEN A TRIUMPH FOR AMERICAN MAKERS

SARATOGA, N. Y., July 24—Results in the Glidden tour which finished here yesterday must be entirely satisfactory not only to the makers themselves, but to the American public as well, for the grueling contest was the greatest demonstration of American-built motor car ever made. Of the forty-six cars that started from Buffalo July 9 twenty-three touring cars out of thirty-two that started and five out of fourteen roadsters survived with perfect scores. As if the 1,675 miles journey were not sufficient to determine beyond question the reliability of American cars, the five tied runabouts are now being driven once more over the course in an effort to evolve a winner of the Hower.

Furthermore, if it had not been for a combination of circumstances, the three touring car teams would also have participated in a renewal of the journey. But one team was prevented from so doing by the business duties of a member, while another trio declined to accept the special committee's decision regarding a protest, the details of which are hereinafter stated. This left a single team of the three tied trios, and after reporting for an official start on the morning of July 24, it formally withdrew, declining to win unopposed, and, therefore, the trophy returns to the custody of the touring board of the A. A. A.

What Perfect Score Means

The motor car buying public, which had followed closely the progress of the contest, and perhaps been left somewhat in doubt by the outcome, so well did so many of the cars perform, was inclined to regard the run-off with mere curiosity and perhaps some wonder that the interjection of prize trophies should have made it necessary to carry the test to so merciless a conclusion. The wonder of the demonstration of the fitness of American cars of all types, powers and prices to negotiate such highways as the states provide under such abnormally strenuous conditions as were set by the rules grows with contemplation and analy-

The three teams that tied for the Glidden trophy, Buffalo, Chicago and Columbus—did not participate in the expected run-off. The Chicago Motor Club was unable to take part because Aubel, driver of the Oldsmobile, was forced to return home; the Peerless team, representing Columbus, withdrew after protesting the McGuire Pierce, while the Pierce company refused to accept the walk-over, so the Glidden trophy was returned to the touring board of the American Automobile Association.

sis of the results. A "perfect score" meant the maintenance of a time schedule that but once was as low as 17 miles and but once as low as 18 miles an hour, in both cases over the roughest of water-break abounding mountain roads, and during the other 10 days ran from 19 to a fraction under 20 miles an hour, the legal speed limit at all times being regarded by the schedule makers. It meant that during the run no replacements could be made of parts not carried and catalogued on the list given the committee, and that all adjustments, replacements and replenishment of fuel should be made on tour without allowance in the time schedule. None was possible outside the run, for all cars were placed under guard from the checking-in at night until the checking-out in the morning. Three broken wheels, a broken axle casing, a weak transmission, a loose transmission plate, and a troublesome brake come pretty near to being a sum total of the penalization causes in the touring car class, a list of casualties small enough to trust fairly to one's memory in the statement.

Yet for 12 days the cars had battled with the worst roads the middle and New England states had to offer in a run of 1,675 miles, furnishing an average of close to 140 miles a day, a touring proposition

that even the most enthusiastic voyagers-a-motor would hesitate to undertake for pleasure. Pennsylvania furnished 2 days of rough going through the Alleghenies and added a third in the Delaware water gap region that meant bumping the bumps and chug-chugging up grades that put frames and motors to as cruel a test as the east can furnish. New York gave good roads most of the way, and so did Massachusetts. Maine, New Hampshire and Vermont, however, were penetrated to their picturesque wilds. The Poland, Rangeley and Bethlehem district highways, to put it mildly, were not built for "joy riding." Then came the wind-up run of 184 miles to Saratoga on a 20-mile-an-hour schedule. It embraced a scramble over the Green mountains that put even the run in and out of Bedford Springs in the shade for knock-out qualities. Here were water-breaks that could not be "one-two-three-foured" and furnished sheer drops of from 2 to 3 feet. If any part were weak from long pounding there would have been no escape for it.

Regarding the Protest

The facts relative to the protest were conflicting in not a few respects, but sufficiently congruous to make it certain that there only could, in the realm of equity, be only one decision, and that was the one rendered by the chairman after mature deliberations with his committee. Immediately after checking out yesterday morning, J. W. McGuire stopped when ½ mile from the checking station to take off the tire chains. Two men were on the job and the utmost dispatch used. The chains without wait were tossed into the tonneau and the car was off in hot chase on the chairman's machine. Nothing more was said of the matter by observer or driver. The car waited in line at Saratoga over 1 hour to check in, there being no intimation on the observer's part that 3 minutes should be added to the car's running time because of the time lost in taking off the tire chain. Nothing was said by the observer



CHECKING OF THE GLIDDENITES AT THE FINISH



ONE OF THE FIRST CARS TO REACH SARATOGA

before checking in of this time. Immediately after checking in the observer made time lost. Driver McGuire signed it and immediately after noted the 3 minutes recorded. He at once protested, claiming that the time spent in removing the chains was less than 1 minute, which would not affect his checking in because of the 2 minutes leeway permitted. The observer claimed he took the time accurately from the time the car stopped until the time it started again and for this was roundly censured by Chairman Hower because observers were explicitly instructed to take the actual time required on the tire work and not the time from the stopping of the car until it started on the road again. Much talk was heard because of the observer not having made out his observer's report until after the car crossed the checking line. McGuire made a mistake in not asking the observer immediately after the chains were taken off as to the amount of time consumed. It was not obligatory on the observer to give this time without being asked, as his duties were simply those of observing and recording his observations.

Chairman Hower's Reasoning

In commenting on his decision in which the Pierce car was given a clean score, Chairman Hower dwelt on the fact that the car waited in line for over 1 hour and that no work was done during that time excepting to fill with gasoline and oil. The contest was not one of watches, but of cars, and it was not the spirit of the rules to throw out a perfect-score team because of a dispute in which it was apparent both the driver and observer were at fault. Earlier in the run penalties were thrown off other makes of car on technical grounds. One Oakland had 2 points removed which were imposed for having a person other than the driver and mechanic pour water into the radiator. The car was by the roadside; R. M. Owen had bought a pail of water for 60 cents and only required a part of it. He asked anybody else if they wanted what remained and being answered in the positive, proceeded



BIRD'S-EYE VIEW OF ARRIVAL AT BETHLEHEM

to empty what was left of the 60-cent pail of water into the Oakland radiator. The rest was known. The observer, faithful to duty, recorded it and the chairman at first imposed the 2 points, but later, upon being waited upon, removed the points. On the first day of the tour three of the four cars crossed the line ahead of time, but the penalties were removed by the touring board.

The worst day was Black Monday, just a week previous to the clean score Monday out of Boston. Black Monday's run was from Bedford Springs to Harrisburg over the mountains, and six cars received penalizations, in all 1,699 points being lost on the day. The evils of the day were not altogether responsible for the heavy toll, rather the previous Saturday climb from Pittsburg to Bedford over the Alleghanies weakened a few of the machines and the second day of mountain work completed the breakdown. The remaining 10 days of the tour were about equal in the penalty score, although the toll was heaviest at the start of the contest, as is shown by the following tabulation:

Day	Number of cars penalized	Points penalty
First....	1 Gearless	1,000
Second...	3 Oakland, Garford, Blomstrom	1,303
Third....	4 Garford, Stoddard, Overton, Oakland	1,185
Fourth...	6 Selden, Franklin, Moline, Franklin, Overland, Overland	1,696
Fifth....	3 Franklin, Franklin, Moline	2,808
Sixth....	2 Reo, Overland	45
Seventh...	1 Premier	1,000
Eighth...	2 Studebaker, Overland....	1,885
Ninth....	0	
Tenth....	2 Oakland, Marmon	52
Eleventh.	1 Marmon	1,000
Twelfth..	2 Oakland, Marmon	999

Twenty-seven Penalizations

In all twenty-seven penalizations were imposed, which does not mean there were twenty-seven cases of defects, as it often happened a car broke a spring one day and was penalized points for being late in arriving, the car withdrawing as a contestant the following day, preferring to put in a new spring to taking the full 1,000 count. This condition shows up as two penalties when in reality it is but one and should be considered as such. Eliminating all cases of this, there were but twenty-one cases of troubles in the 12 days of the run. Of these three were cases of wheel breaking, the unfortunate ones being Van Tine's No. 29 Garford, Jones' No. 25 Studebaker and Clark's No. 22 Marmon. Three went out through springs breaking—No. 32 Selden, No. 12 Franklin and No. 106 Franklin. In addition to this were a few other cases of spring troubles; Frank Nutt broke a leaf. The No. 28 Oakland broke every leaf of one spring on the third last day, but was able to continue without replacement until the end of the tour. Two cars were eliminated because of cracking cylinder castings; No. 102 Moline went out when 3 miles out of Harrisburg, the casting of one pair of cylinders breaking, due to a too thin portion in the wall between the waterjacket and the cylinder bore. The car was run to Philadelphia on two cylinders, at which point a new casting was put



WAGONER, HAYNES, ENTERING TOWN OF BETHLEHEM



GLIDDEN CARS PARKED FOR THE NIGHT AT POLAND

on. Howard Marmon broke a cylinder casting on his car the last day and had to withdraw, not finishing the run. At present it is not known whether it was a defective casting or if the break was due to other causes.

Rear Axle Trouble Slight

There were three or four cases of rear axle trouble. Hurlburt broke the drive shaft in the rear axle of his No. 31 Garford on the third day out and lost 8 points by using a new one; No. 111 Overland broke a rear axle leaving Pittsburg, but a new one was made in a blacksmith shop and the car finished the run; Owen's No. 4 Reo struck a hole too severely the second day out and had to straighten a back axle, which ran through the tour without any more attention and in good shape, there being no evidence that any trouble had occurred. Another of the Overlands broke an axle on the second last day's run, due to skidding when giving the road for a contesting car to pass.

Few parts of the cars were watched more closely than the back axles and it is one of the pleasing comments of the tour that they stood up so well. There were three cases of truss rods supporting the axles breaking but all of them were speedily repaired. But one case of frame troubles arose, that being the No. 110 Overland, that was ditched on the run into Harrisburg and cracked the left side member midway of the axles. The driver and mechanic in a blacksmith shop made a repair that stood up perfectly to the end of the tour. Transmission troubles were practically eliminated, there being only three cases of such and all of them of minor importance. The Blomstrom gyroscope had a little difficulty with slipping, due to improper adjustment of parts; Lockwood's Reo got 12 points because of some screw being lost out of his planetary set; and the Gearless had trouble, due to

breaking of a part on the first day out before it collided with the telegraph pole.

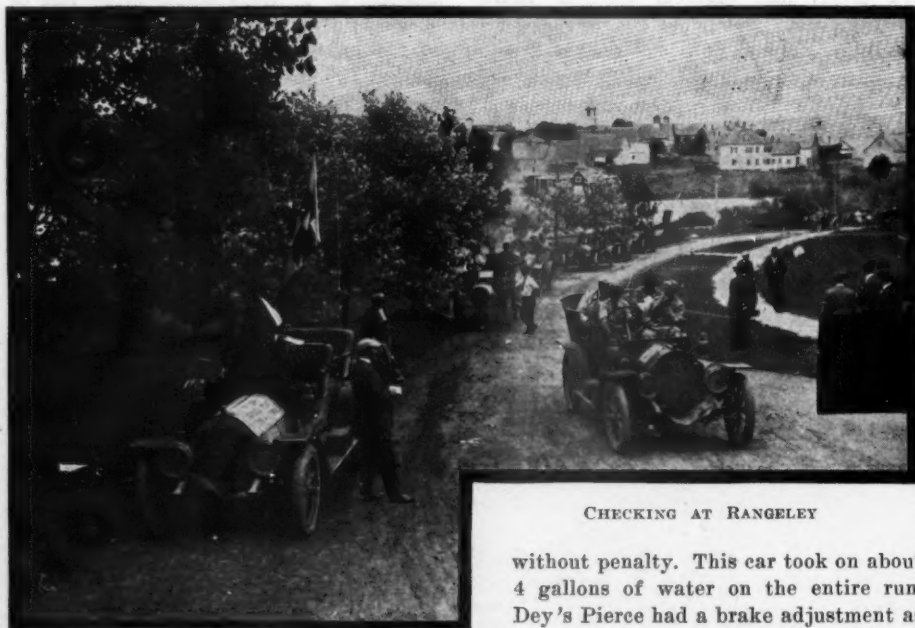
Record exists of only one case of brakes giving trouble, that being No. 22 Marmon, on the third last day of the run, when one set seized, due to too sudden engagement. The seizing was not because of fault in design but was due directly to the expanding cam pin working endwise. This car had not been run previous to the start of the Glidden and the trouble was due to a bit of carelessness in assembling. Front axle troubles were limited to the No. 28 Oakland, that sprung its axle the

penalization field, it being possible for the cars to continue to the end. Three cases of broken oiling parts were recorded towards the end. One had a broken cylinder oil lead and another had oiler difficulties. Spark troubles were *non est*, in fact many of the cars, including some of the Peerless, Pierce, Marmon and Stoddard cars, made the complete run without having to take out or even look at a spark plug. The old trouble of cracked porcelains seems to have entirely vanished. Many fed a great deal of oil, so much that the back of the car was wreathed in a cloud of smoke; but in spite of this there was not any sooting of plugs or motor heating due to preignition which might have been caused by the accumulation of carbon in the cylinders, caused by too much oil.

Freedom From Carbureter Trouble

The freedom from carbureter troubles was one of the features of the run, there being but two or three recorded cases of where a carbureter had to be adjusted and all of those occurred on the run along the ocean beach out of Boston. Mrs. Shirley's Overland was one of the two cases of a leaky gasoline tank; the car having the other tank trouble is forgotten.

How many of the cars behaved is best gleaned from information given by the drivers of many rigs upon their arrival in Saratoga and which information in not a few cases was borne out by the testimony of observers. No. 35, Aubel's Oldsmobile, had six tire punctures, used one new casing, did not make a single motor adjustment or brake adjustment and broke one spring shackle bolt which was replaced



CHECKING AT RANGELEY

third day out and had it reset in a blacksmith shop; and to the No. 9 Premier, which ran into a curb going into Kingston on the seventh day out when the bolt in the steering knuckle broke. The accident occurred at a sharp curve.

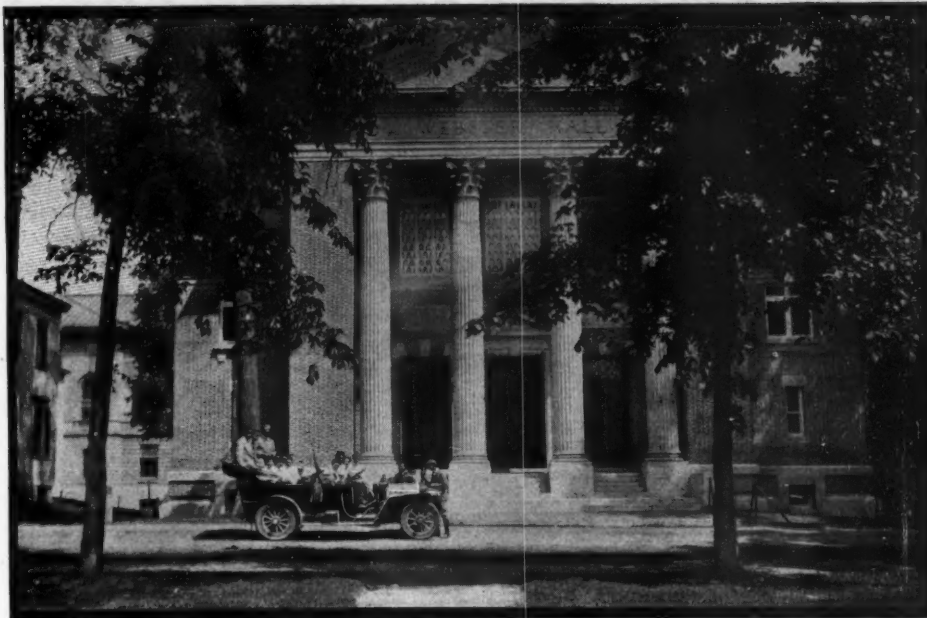
Not a few cases of mechanical difficulties occurred which did not come into the

without penalty. This car took on about 4 gallons of water on the entire run. Dey's Pierce had a brake adjustment as its only alteration. Arthur Kumpf made a brake adjustment and added a new tire casing. So is the story with the Pierce and Peerless machines which was recorded in these pages last week. No. 14 Franklin did not make an adjustment of any nature. It had but one puncture and not a blowout and did not need a new casing. Harry Hammond's No. 8 Premier went

through without a single adjustment other than one on the brakes and used but two new casings. The two Stevens-Duryea machines traveled with particularly little tire difficulties. Driver Clark of No. 17 had but one puncture and the observers reported very little use of the brakes on this car in the mountain work which was music to Clark's ears.

Work of Two-Cylinder Cars

The two-cylinder Reo cars and the two-cylinder Oakland machines astonished a great many of the four and six-cylinder enthusiasts on the run. Before leaving Buffalo many of the tourists predicted they never would reach Pittsburg, but all four of them were on hand ahead of time at Saratoga and not one of them took the 1,000 count either. In fact, Lockwood's Reo and No. 28 Oakland have a unique record, being the only two cars to receive penalizations and not to withdraw. Lockwood's carried 12 points and the Oakland 58. It was remarkable how these little machines performed in mountain work and the manner in which they took grades on the high speed. Both the Reos were excellently handled by Owen and Lockwood and the cars were in as good shape and running as well at the completion of the tour as at the start. The Oaklands were not so well handled and No. 28 owes all of its penalizations to reckless driving over waterbreaks. The other Oakland received better care and went through in good shape and without a point against it. The Oakland has its two cylinders counted vertically with both cranks



GLIDDENITES STOP TO INSPECT DARTMOUTH COLLEGE AT HANOVER

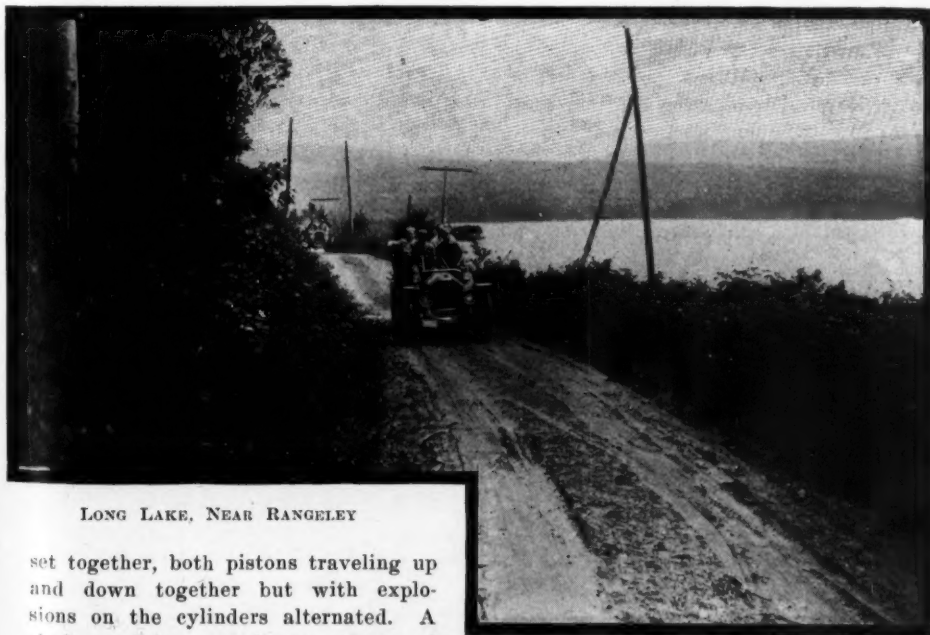
the time of the class A machines, which was as close as possible to 20 miles an hour, except on a couple of days. It is maintaining this schedule as pilot car on the run off and it excites not a little interest to see a two-cylinder machine scattering the confetti for four and six-cylinder contestants.

Cases of Radiator Trouble

As previously stated in these columns, radiator troubles were noted in a great many cases and continued until the end of the tour. Radiators leaked near the

heavier transverse member of the frame in front of the engine. In not a few cases a light-dropped channel member is the only crosspiece in front of the engine and this has not proved enough in many cases. The front ends of the frame crosspieces must be well braced. If this is done radiator troubles will be fewer.

Fenders stood up remarkably well and in the majority of cases rear fenders are attached sufficiently far from the wheels so that when tire chains are used they do not rattle against and wear out the fenders. Only two cases were noted where holes were worn in the fenders because of the tire chains hitting them. Last year many fenders were put entirely out of commission; this year only the Studebaker that hit the bridge and tore off the right front fender finished in this shape. The wrapping of springs was practiced by a great many contestants and proved most efficacious, not a case of springs so wrapped being broken being noted. Shock absorbers gave a much better account of themselves than last year; but the flexible shafts of the speedometers gave not a little trouble, although 100 per cent better than a year ago. Lamps and horns stood up well and where watches and other accessories were present they showed little evidences of hard usage. In fact, looking over the cars as they stood in line waiting in front of the Grand Union hotel at Saratoga to check in, made everybody proud. The cars were in good condition and looked more as if they were waiting to start out on a 2,000-mile run than after having actually finished such a test. The wheels were straight, mud aprons were tight, axles were in line, bodies were in good shape and every motor was hitting regularly on all of the cylinders. Everyone was delighted with the successful demonstration made by American cars over American highways and the condition in which they finished.



LONG LAKE, NEAR RANGELEY

set together, both pistons traveling up and down together but with explosions on the cylinders alternated. A shaft revolving opposite to and geared from the crankshaft carries the balance weights, which are so placed that when the pistons are rising these weights are going now thereby neutralizing the vibration. So free are these motors from vibration that a lead pencil can be stood on end on the motor when running. Owen's Reo made the entire Glidden circuit on

base plates. These temporary jobs of soldering sufficed but for a day or more, when the water would be running out as badly as before. The cause was more with the radiator support than with the radiator construction. From a careful analysis it would seem as if the trouble can be avoided to a great extent by the use of a

CLIFTON'S PIERCE WINS THE HOWER TROPHY

BEDFORD SPRINGS, PA., July 29—Special telegram—Charles R. Clifton's Pierce-Arrow, No. 103, is the winner of the Hower trophy, that being the decision reached when the survivors in the run-off of the tie reached here this evening. R. D. Garden's Pierce, No. 100, was the only other roadster left, the Premier and the Stoddards dropping last night. It was decided that Clifton's car should check out tomorrow morning and Garden's car withdraw, thus breaking the tie.

The run-off of the Hower trophy tie was decided sooner than expected. After running 3 days without a sign of weakening the beginning of the end came yesterday in the run to Pittsburg from Cambridge Springs, when the front axle of the Premier broke 48 miles out of Cambridge, caused by coming over a sharp rise and then down a steep dip that had a double washout at the bottom. Weidley fixed up his axle and finished here last night, but he was through. Then it looked like a continuation of the run-off between the Pierces and the Stoddards, but at a meeting last night the Stoddards withdrew from the contest. The reason for this was that the two Stoddards are owned by private individuals, over whom the company had no jurisdiction prior to the run-off and that, obeying their wishes in the matter the cars had been withdrawn.

This left only the two Pierce-Arrows surviving, and at noon today they left Pittsburg and made the run to Bedford Springs, both checking in perfect.

Stop in Buffalo Over Sunday

Buffalo, N. Y., July 25—The five perfect-score Hower cars that left Saratoga on Friday morning on the run-off all reached here tonight with their scores in as good condition as when the run proper was completed. It is the general opinion here tonight that, barring the unexpected accident, such as skidding against a stone or sliding into a ditch and breaking a wheel, all of the five will, after the lapse of 16 days report at Saratoga, having made two successful circuits of the course.

Yesterday, when the start was made from Saratoga, all was not as peaceful among the five aspirants for the Hower shield, but at the Bates house in Syracuse, the first night's stop, all the drivers, mechanics, observers, as well as E. L. Ferguson, Chairman Hower's representative, and Dai Lewis, the official pilot, got together in a genial love feast, the outcome of which was the establishment of such a friendly feeling that tonight everybody is happy and all are prepared to keep on the Buffalo-Boston-Saratoga circuit until the snow falls, if need be. R. M. Owen, whose little No. 4 perfect-score Reo in the Glidden is carrying Dai Lewis and the confetti, has officially announced that he and the car are on the job until Christmas or even New Year if demanded. All told the Hower run-off crowd is happy.

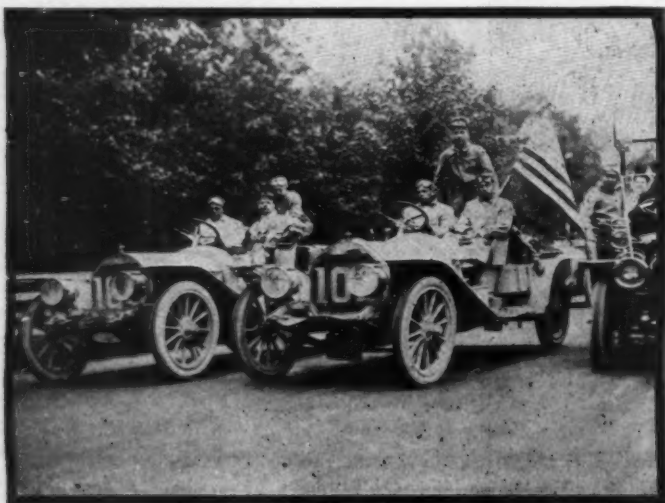
The first day's run, from Saratoga to Syracuse, a distance of 160 miles, was by way of Amsterdam, Fonda, Herkomer and Utica. The roads were fairly good; so good that some of the contestants made the first 100 miles in 3 hours 25 minutes. All of the cars made the run faster than the 20-mile schedule and had good time to oil up and do everything that was deemed necessary for the comfort of the cars.

In contrast to this first day was today's run from Syracuse to Buffalo, over a 180-mile course on 9-hour schedule, 50 miles of which was over slimy roads that had been soaked with a 12-hour rain and additionally moistened by a good downpour that lasted during the first 2 hours of the run. At times on this 50-mile stretch the cars were crosswise of the road; in one or two cases they slipped into the ditch but were extricated without the necessity of hiring horses. In pleasing contrast to 50 miles of such going was as many miles over the best macadam obtainable. The remaining 80 miles was medium going. In spite of this all of the cars were waiting over an hour to check into Buffalo tonight. This Syracuse-Buffalo run was the hardest day's work since the cars pulled out from

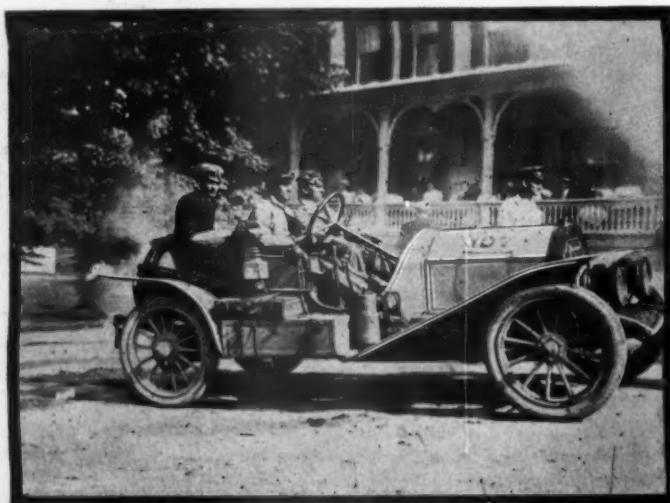
Buffalo on July 9 and the contestants as well as officials feel that if the cars can behave so satisfactorily on it, there is no question about their performing up to the mark the rest of the way. Today's run was by way of Auburn, Geneva, Rochester and Batavia.

The five contestants fighting the duel are: No. 100, Great Arrow, J. S. Williams, driver; No. 103, Great Arrow, Ed Rettling, driver; No. 104, Premier, George Weidley, driver; No. 107, Stoddard-Dayton, G. P. Moore, driver; No. 112, Stoddard-Dayton, R. C. Shirk, driver. Of these five machines which are today attracting so much attention throughout the country the two Pierces are six-cylinder machines of 43.8 horsepower; the other three, the Stoddard-Daytons and the Premier, are four-cylinder cars of much lower rating. The Premier is the only example of low-tension ignition as well as the only one of the five having a multiple disk clutch. The Stoddards and the Premier use selective gearsets whereas the Pierce machines have a three-speed progressive set with the speed change lever on the steering pillar immediately beneath the steering wheel. Magneto ignition is employed on all; and of special interest is the use of Goodrich tires on all five of them, the Goodrich company having its representatives accompany the cars on the tour with extra tires, the same as done during the Glidden.

Up to tonight all of these five cars have covered exactly 2,000 miles since leaving Buffalo and it is astonishing the little attention they have received during that time. G. P. Moore, driving No. 107 Stoddard-Dayton, said today that during those twenty centuries he has had but a couple of blowouts and put on two new casings and that in the early distance he has not made a single adjustment on any part of his Stoddard-Dayton, a truly remarkable performance. R. C. Shirk, driving the other Stoddard, has had a couple of punctures and put on one new shoe. He made



THE TWO PIERCE-ARROW ROADSTERS

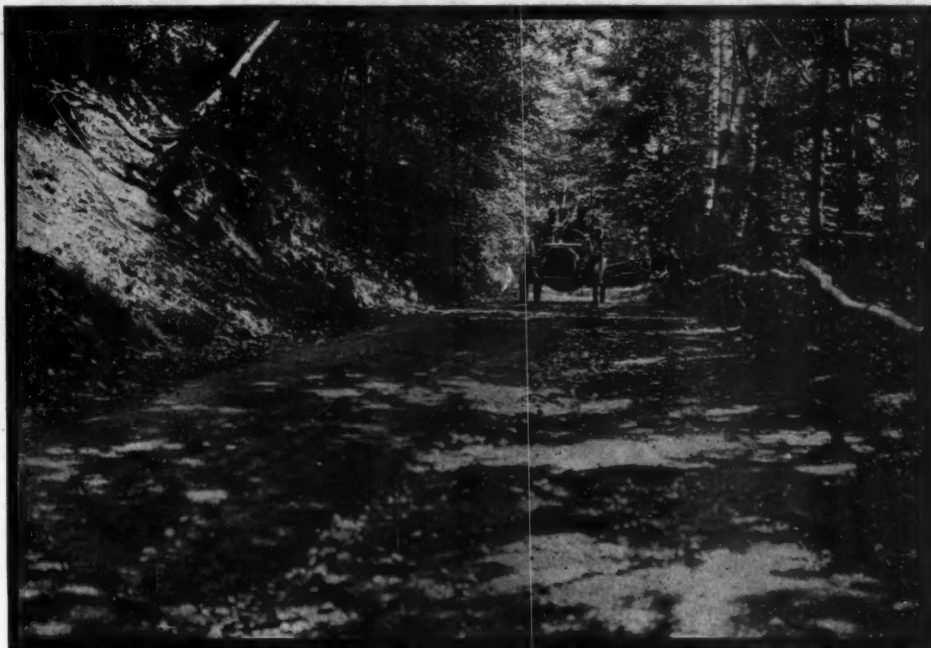


G. P. MOORE'S PERFECT SCORE STODDARD-DAYTON

one brake adjustment, the only adjustment during the 2,000 miles. J. S. Williams with his No. 100 Pierce six, experienced in the same time one puncture, which was on the second last day's run and which necessitated the use of a new casing. He made one brake adjustment during the complete circuit and added but 1 quart of water to the radiator in all of that going. Rettling's Pierce No. 103 had a little harder tire luck, meeting with no fewer than four punctures and one blowout and replacing three casings. One brake adjustment was made on this car and water taken on but twice, once at McConnellsburg between Harrisburg and Philadelphia, and the other at Boston, not more than a quart being taken on at each place. Weidely in his 104 Premier has had a most successful run, not having to make any adjustments and using but one new casing. The low-tension igniters have not received any attention since the start of the run and one or two of the observers who have ridden on the car say it is one of the firmest and most solid cars in the whole tour. Weidely is playing safe in the run-off. He knows the car from first to last and is looked to to give a good account of himself before the end is reached.

The Pierce machines are the only two of the five to use separately-cast cylinders with opposite valves. The Stoddards have cylinders cast in pairs. They have the valves in the cylinder heads, opened by rocker arms, one rocker arm for the intake and exhaust valve of each cylinder. The Premier cylinders are cast in pairs and have opposite valves. The three cars are very representative of the American industry, each being an ideal example of a construction that is attracting the attention of the country. The Pierce is of six-cylinder design with a crankcase containing the oiling system; the Premier is a leading example of low-tension ignition, and the Stoddard-Daytons are representative of the medium-priced cars and a leading exponent of the much-talked-of style of valves in the head. They also are deserving of attention because of using copper waterjackets.

The drivers are in every instance quiet, stand-pat performers, not one of them of the grand stand variety. Ed Rettling is a tester at the Pierce factory. He drove the Pierce pilot in the New York-Pittsburg run in 1903, the car being a two-cylinder type. He drove from Boston to St. Louis in the St. Louis tour, obtaining a perfect score certificate. The present run is his third big performance. J. S. Williams is coupled with the New York Pierce agency. He drove in the 1907 Glidden, carrying off a perfect score. He went with Teddy Dey in his run over the present tour roads a few weeks previous to the start of the tour. George Weidely, driving the Premier, is factory superintendent and treasurer of the company as well as being head of the engineering department. He never had driven in a con-



PICTURESQUE STRETCH OF ROAD IN THE GREEN MOUNTAINS

test previous to the present one. Both of the Stoddard-Dayton drivers are novices at the touring game, but already have shown by their knowledge of the machines as well as their road driving, to be foemen worthy to contest with the best road performers in the country.

During the run-off Dai Lewis, with R. M. Owen in Reo No. 4, precedes the five machines, scattering confetti, and E. L. Ferguson follows the last car out, with Winchester in the big Pierce six, which was Chairman Hower's car during the Glidden. It will require 16 days for the run around the circuit and back to Buffalo. Sundays will be the only rest days, the Saturday stop at Boston not being

considered. The schedule throughout the contest will be 20 miles per hour, which is a little stiffer than that which ruled in the Glidden. The start is made at 8 o'clock each morning.

Rough Going on Monday

Cambridge Springs, Pa., July 27—In a heavy thunder storm and a beating rain, for the last 10 miles of today, all five Hower cars floundered over a treacherous clay road, and came in with perfect scores, with anywhere from 1 hour to 1 hour 30 minutes to spare on the running time. The distance was 117.3 miles and the schedule 5 hours 52 minutes. So slippery was that 10 miles that not a car came over it without going into the ditch on one side or the other, and two of the cars left the road entirely in their skidding, going through a wheat field for a short distance before straightening out to get back to the highway. In fact one of the cars following the tour—not in competition—slewed so badly at one point that it threw mud and water into the same wheat field with so much force that the wheat was laid as flat as would have been the case with a reaper. At this same point one of the competing cars, No. 112, in working its way out of the ditch, ran out of gasoline, but fortunately got a supply at a nearby farm that was modern to the point of having a gasoline motor for general work.

The only other incident along the way was a carefully planned speed trap 55 miles out of Buffalo. The pilot car, having had warning by telegraph, placed a signal man $\frac{1}{4}$ mile ahead of the trap and to the disgust of the man at the running-in end of the snare each car cut down to 7 miles per hour, some even stopping to get the hour of the day—which was surlily given—and taking it to the man at the out-end, who was of different temperament, and apparently enjoyed the joke.



IN THE GREEN MOUNTAINS

TIME-SAVING DEVICES USED IN GRAND PRIX

PARIS, July 20—No better proof of the keenness of the contest for the grand prix could be found than in the manner in which the tire and gasoline stations—the ravitaillement, as it is called here—had been fitted up. With a few exceptions by firms having little chance of winning the race whatever help they were given from the outside, there were more labor-saving devices and more elaborate organization here than ever before. The old method of handing up gasoline in large tin cans, the bottoms of which were punched in to facilitate emptying was abandoned as far too slow. Panhard, Mercedes, Dietrich, Bayard-Clement and one or two others had all their gasoline under pressure in a large tank in the ravitaillement pit. A long flexible tube led from the tank to the cars and allowed filling in but a fraction of the time usually employed. It was interesting to compare this up-to-date method with the slower ones. Emile Stricker, for instance, the Yankee driver of the Porthos six-cylinder, ran to his stand and yelled for gasoline. It was handed up in large open-mouthed milk cans; when all that was available had been given the tank of the racer was only half filled and poor Stricker stamped and bit his fingers in rage as he waited for the small cans to be handed up to him. A similar delay happened to Henry Fournier, which so enraged him he started up the car for its last lap before the mechanic had got into his seat.

There were greater facilities than ever for speed in the changing of tires, though as a matter of fact the performances were not always of the best. Ordinary jacks were not used except on a small proportion of the cars. Panhard and Fiat, among others, had large pneumatic jacks made to fit under the rear axle and raise the rear of the car with two or three turns of a handle. To raise the car was the work of a second and a half, to lower it did not occupy more than a second. Dietrich had a large jack made to fit under the rear axle and provided with two levers about 7 feet long. With the driver at one lever and the mechanic at the other the vehicle was raised from the ground with one simple downward stroke.

Water and lubricating oil were handed up to the drivers in the old-fashioned way, the former in open-mouthed cans and the latter in the metal cases usually supplied by the makers. With the exception of the British Austin cars it was remarked that the racers very rarely took on water during the race.

Spare parts were stocked in abundance. Gaskets, spark plugs, nuts, bolts, magnetos, and even radiators, cylinders, pistons and piston rings, sprockets and gears were laid out in perfect order ready to be handed up if the call came for them. But the call never did come, for with the ex-

ception of Erlé, who changed a radiator at the second station the repairs were slight, the cars either being put out of the race in a very damaged condition or through tire and wheel accidents.

Methods of preparing the cars varied with the different drivers. The Itala cars carried a cylindrical gasoline tank behind the driver's seat of such a size that the inflated tires formed a ring around them. The Weigel cars had a similar arrangement, with the addition of basket work at the base and around the tank in order to diminish the vibration. On the Porthos the gasoline tank was behind the seats and to the rear of this a round tank without a lid, made of the exact size to allow tires to be put around it, while the interior could be used for carrying the jack or any tools most likely to be needed in the race. Each of the cars in this team also had a spare magneto carried on suitable brackets within the frame. As an independent timer was employed a change of magneto could be made just as quickly as the changing of a plug.

The road having been considerably loosened by the speedy voiturettes of the preceding day, flying stones were to be feared. As a protection, the Weigel and the Itala cars carried a fine gauze screen in front of the radiator. Duray had a small circular wire gauze screen attached to the right hand side of his dash board in order to protect his face from stones thrown up by a car ahead. The same driver had his little joke in the form of an enamel plate attached to the side of the car reading "Dangerous to lean out."

The tarred surface was feared by most of the drivers who wore not ordinary goggles but complete masks, making them altogether undistinguishable at a distance of a few yards. In addition a thick layer of cold cream or other ointment lay under most of the masks. Strang stuck to the ordinary type of goggle; his mechanic, Guichard, who did the same, lost his pair while jumping off the car, and, no others being available for the moment, had to make a round with his eyes entirely unprotected.

GARAGE MEN ADOPT NEW RATE

Brussels, July 20—Unless the owner or chauffeur gets his supplies of tires, accessories, lubricants and fuel at the garage where he stores his car his patronage will be declined. In other words, the garage proprietors have come to the conclusion that as it is impossible to make money by simply taking care of cars, in keeping them over night or for a month and doing the dirty work, viz., cleaning, there is no possibility of making a profit unless exorbitant prices are charged. This was discussed at a meeting some time ago at which every garage owner in the city was

present. The meeting prepared rules to govern the business which will permit of a fair profit all year around. They are as follows:

1—Garage charges are payable in advance and are as follows: Voitures or big cars, \$7 per month; voiturettes—small cars—\$4 per month. In order to get the benefit of these prices the customer must purchase all his accessories, tires, fuel, lubricants, etc., at the garage.

2—Cars that are stored by the month must be paid for in full for the month started even if they are taken care of only a few days.

3—Garages can only be responsible for the indispensable accessories on the car. They are not responsible under any circumstances for cloth, body coverings, pillows, extra tires, parts and accessories for replacement.

4—The monthly rates do not include insurance against fire. The taking out of insurance against fires is obligatory and will be charged every month on the bill.

5—The cleaning of the brass parts and the washing of the car will be charged extra.

6—The garage charges amount to from 40 to 80 cents per day.

HONOR SCHEME WORKS WELL

Philadelphia, Pa., July 27—Ten days ago the Norristown Automobile Club induced the Whitemarsh township authorities to adopt the "honor" plan in dealing with motorists—i. e., all espionage and traps were withdrawn and motorists generally notified of the change and urged to keep within the legal speed limits in town and country. Not only has the scheme worked well, but the plan is spreading to adjacent townships and counties and is being discussed in New Jersey and Delaware. Motor clubs in the several sections will prosecute offenders, in the belief that such action will cement the good feeling that is rapidly growing up between the township and county officials and the motorists. Magistrate Rhoads, of Whitemarsh, whose township was traversed by the Glidden tourists, kept tab on the cars, and says that but one of the fifty-six machines exceeded the 20-miles-an-hour rate and the one exception was but a trifle over the legal limit. The scheme already has demonstrated that the majority of the road burners are "unattached." Chief of Police Lever, of Abington, says that of upward of 100 violators of the speed laws but two were affiliated with clubs, and the charges against these two could not be sustained. The situation is rapidly assuming the position of "clubs vs. unattached," the former assuming the role of prosecutor, the latter class containing much the larger proportion of those who take chances with the statutes. The Automobile Club of Delaware County is paying two men whose sole duty it is to go about warning motorists generally of the danger resulting from high speeding. All the members of this club have obligated themselves not to run faster than 18 miles an hour. The Lancaster, Pa., club also is taking great interest in the "honor" movement. Indeed, this organization is one of the originators, having 3 months ago passed a resolution to observe every state, city and borough speed regulation. As a consequence the relations existing be-

tween motorists and the public are most cordial, the "unattached" having seemingly profited by the example of the clubmen. The success of this scheme will be watched with interest by motorists in other sections of the country, where speed traps abound and where there are conflicts with the authorities.

SAVANNAH SELECTS COURSE

New York, July 27—The Automobile Club of America has definitely announced at Savannah, Ga., the course for its "Grand Prize of America," and work has been started to prepare it for the race. The course is 26.73 miles long, and will be covered fifteen times, making a total distance of 400.85 miles. While the road surface is undoubtedly excellent, no record-breaking speed can be expected on account of the great number of turns. There are at least a dozen right-angled corners, and two or three even sharper; the longest straightaway stretch is about $2\frac{1}{2}$ miles. An elimination race may be held 3 days before the main event, as the A. C. A. officials expect will be necessary, and a proposed 200-mile light car race is talked of the day before. The course will be patrolled by state militia and a detail of police, and if these repeat their good work of last year there should be no trouble from the crowds. The present grand stand holding 8,000 persons will be enlarged with ample parking space nearby.

GRAND JURY INDICTS MOOR

Chicago, July 29—The war at Glencoe is just becoming interesting and now the Moor-Stribling case has gone to the higher courts. The Glencoe justice who heard the charges made against Officer Moor by Miss Stribling, who was hit in the back by a bullet fired by the policeman, discharged Moor after a stormy hearing in which the Chicago Automobile Club, through Sidney S. Gorham, played an important part. Assistant State's Attorney Barbour was at the hearing and when Moor was discharged he gave voice to his opinion of the shooting in such forcible language that it is said he was nearly mobbed by the Glencoeites. Yesterday Barbour brought the case before the grand jury, which indicted Moor.

RAIN SPOILS ENDURANCE RUN

Philadelphia, Pa., July 27—An all-day rain marred the success of last Saturday's initial endurance run of the just organized Automobile Club of Chester County. But eleven cars competed of the fifty originally entered, and the trip developed into a mud plug. It was an endurance run, all right, and although no attempt was made at keeping tabs on the contestants John Boyd's Buick and H. S. Scott's Buick finished one-two, with J. C. Maynard's Ford third. One unpleasant incident of the run was the fining of Pilot W. L. W. Jones \$5 by the West Chester authorities on the charge of "littering the streets with paper," otherwise the confetti.

RACE WEEK AT OSTEND

Hautvast in Bayard-Clement Six-Cylinder Grand Prix Racer Carries Off Time Honors

Ostend, July 17—The sixth annual motor week of Ostend begun last Monday. Only one event was on the bill the first afternoon, the 5 kilometers standing start and 5 kilometers flying start, all in one race. Two classes of cars were considered, touring cars and racing machines. The fastest runs were made by Hautvast, in one of the six-cylinder Bayard-Clement grand prix racers and by Edge, in a big Napier six. Hautvast's time for the 5 kilometers standing start was 2:20 $\frac{1}{2}$, while that of Edge was 2:30. For the same distance with a flying start Edge required 2:07 $\frac{1}{2}$ and Hautvast 2:07 $\frac{1}{2}$. Thus the total time for the French car for 10 kilometers—6.22 miles—was 4:28 $\frac{1}{2}$ and that of the British car 4:37 $\frac{1}{2}$. A Fiat was third, its total time being 6:05 $\frac{1}{2}$.

Among the touring car contestants Baron de Caters and Jochems, in Mercedes cars, were the winners. De Caters made the fastest trials in heat No. 7 which was for cars having a bore of 145 mm. or more. He drove his big Mercedes excellently and covered the first 5 kilometers in 2:45 $\frac{1}{2}$ and the second 5 kilometers in 2:21 $\frac{1}{2}$, totaling 5:06 $\frac{1}{2}$. Jochems won heat No. 6 and a special run for cars having a bore of from 130 to 145 mm. His time was 5:51 $\frac{1}{2}$ in the former heat and 6:36 in the other one. Other winners of the afternoon were Jacobs in a Germain; Wery in a Nagant; Gehenniaux in a Berliet; Steckke in a Nagant; Meeus and Sabbe, both driving Germain cars; and Fischer in a Vivinius.

The road race, known as the circuit du Littoral, was held Wednesday over a course which, starting at Ostend, passed through Blankenberghe, Bruges, Saint-Andre, Varsseenaere, Jabbeke, Roxem, Westkerke, Ghisteltes, Snaeskerke, Steene and return to Ostend. This course was 44.78 miles long and had to be covered six times, the total distance of the race thus being 268.68 miles. About twenty cars came to the start. The race was devoid of any sensations. There were a few spills but no one was hurt. The winner of the road race was declared to be Gehenniaux, who drove a Berliet in 4:37:47 $\frac{1}{2}$. As he also won the race in 1907 he now will be given the trophy which is said to be worth \$1,000.

In the presence of fewer than three score spectators—including officials—the Ostend meet came to an end yesterday. It rained all day and therefore but few people ventured out to see the kilometer and mile speed trials in which quite a few of Europe's best drivers took part. Considering the muddy course and the danger connected with fast driving over a slippery road, the time of some of the contestants was nothing short of wonderful.

Hautvast, as on the first day, was the most daring and led all the others. Rigal, the fourth to finish in the grand prix, made the second best showing of the day in his big Bayard-Clement, while Gabriel, in a Mors, outsprinted Edge in his Napier.

It is likely that the 1909 Ostend meeting will be held at a much later date than this year. It has been very difficult for the promoters to get the manufacturers interested in the event because it was too soon after the grand prix.

HAUTVAST AGAIN A STAR

Paris, July 19—In the annual meeting de Boulogne the Belgian driver Hautvast in the French car Bayard-Clement was the speed hero, while among the contestants in touring cars a Benz, driven by Schmitt, took the first honors. The meeting started July 17 with the 7 kilometers speed test from a flying start on a level road for touring cars, for the Franchomme trophy. The time for each kilometer was taken and the driver who had the best average to his credit was declared the winner. No time was given out, but marks were credited to each contestant, the one scoring the highest number being the winner. The big Mercedes driven by Jochems was classed first with a total of 390 points to its credit. The Benz was second, having secured 294 points. The owner of the Benz protested against the prize going to the Mercedes, claiming that it was not a touring car, or at any rate that its body work was that of a racing car. The judges allowed the protest. The star event on the second day, July 18, was the contest for the Caraman-Chimay cup. The event was divided into three distinct competitions. The first consisted in a standing start speed test on a level road, the distance being 3 kilometers—1.863 miles; the second was a hill-climb upon a hill having a 10 per cent gradient, the distance of the climb being 1 mile; the third competition also was a hill competition from a standing start, but the distance was only 300 meters, the section of the road chosen having a gradient of 14 per cent. The winner of the Caraman-Chimay cup was the de Dion-Bouton monocylinder car, which scored the greatest number of points, 411. Last year this trophy was won by Jochems in a Mercedes, and 2 years ago the late Cissac in a Panhard captured it.

RENE PANHARD DEAD

Paris, July 19—Rene Panhard, the partner of the late Levassor, died yesterday at the age of 67. There has never been much said about this modest worker, although he played an important rôle in the motor industry of France and of the whole world in fact. He actually started the world-famous Panhard-Levassor company, which was founded at the death of Levassor. For years Panhard was practically unknown to the world of sport, keeping within his atelier or his experimental rooms like Marcel and Louis Renault.

ASKS FOR CUP COURSE

Vanderbilt Commission Makes Formal Application for Long Island Roads for Big Race

New York, July 25—Progress on the 12-mile stretch of the Long Island motor parkway between Central park and Meadow Brook has so far advanced as to positively insure its completion for the Vanderbilt cup race and justify the commission in going ahead in securing the use of the existing highways to complete the desired 30-mile circuit. Accordingly on Tuesday last A. R. Pardington, on behalf of the Vanderbilt cup commission, made to the board of supervisors of Nassau county formal application for permission for the use of about a score of miles of the county roads in the towns of Oyster Bay, Hempstead and North Hempstead for eliminating trials between 5 and 10 o'clock on the morning of Saturday, October 10, and for the Vanderbilt race itself on Saturday, October 24, from 5 a. m. to 3 p. m.

The board has set Monday, August 3, at 10 o'clock in the morning for a public hearing at the courthouse at Mineola. In view of the fact that permission has been readily granted for previous Vanderbilt races, and in the face of the undisputable eagerness of the Nassau county citizens for the running of the race with its attendant liberal pouring of the fraternity's money into the county, there seems to be little doubt of the desired permission being granted.

In its application filed at Mineola, the cup commission outlines the course desired as follows:

Beginning at the Round Swamp road at or near the juncture with a road known as the Manetto hill road to Plainview, thence on a straight road to Woodbury and east along the Woodbury road to a point or juncture of the Woodbury road with the Jericho turnpike, over the Jericho turnpike west to Jericho village, thence south from Jericho village on the Massepegua-Oyster Bay to its point or juncture with the Jericho turnpike, thence west over the Jericho turnpike to the old Westbury road, thence south to the Old Country road and easterly along the Old Country road to Merrick or Whale Neck avenue; thence along Merrick avenue to a point about 400 feet north of the Central branch of the Long Island railroad to the roadway of the Long Island motor parkway. It will be seen that for the third successive time the contenders in America's international classic will race over a portion of the Jericho turnpike.

Through J. S. Harrington, of the Worcester Automobile Club, a special Chalmers-Detroit 50-horsepower car has been entered in the Vanderbilt cup race. It is probable two more Chalmers-Detroits also will be entered. Other assured entrants include two Locomobiles, two Thomas Fly-

ers, Chadwick, Apperson, Frayer-Miller, with a probable list of between fifteen and twenty for the American eliminating event. A six-cylinder Mora was entered some time ago. The assured foreign participants include the Mercedes, winner of the French grand prix, purchased and entered by Robert Graves.

Information just received from Paris indicates that the French club is proceeding in the compilation of the 1909 rules, without conferring with the other clubs. It is contended by some that the piston area should be even more limited, so as to reduce the speed, the tires themselves supplying a limit to the speed quantity. Apparently the Ostend rules were intended to apply only to 1908 races.

POPE COMPANY'S AFFAIRS

Hartford, Conn., July 25—In the superior court on Tuesday of this week the Pope company's affairs received another airing before Judge Curtis, who subsequently passed an order authorizing the receivers to transfer \$300,000 of the company's assets from Connecticut to New Jersey to pay a 25 per cent dividend which was recently ordered by Vice-Chancellor Howell, of the Newark court. The form was drawn up by Arthur L. Shipman, attorney for the Pope receivers, but other counsel objected to it strenuously. Mr. Shipman stated that the concern had \$24,000 in the bank in New Jersey and is expecting \$136,000 more from the sale of the Columbia Steel Co. plant. He stated that for a dividend of 25 per cent it would be necessary to have about \$380,000 and the order read so as to transfer such sums as might be necessary from the \$628,000 now in the hands of the Connecticut receivers, George A. Yule and Albert L. Pope. Percy S. Bryant, counsel for the creditors' protective committee, did not like the order, as he contended it did not conform to the petition. He quoted many figures and reminded the court that the concern had \$1,338,000 in cash in the various jurisdictions, \$39,000 in outstanding drafts, and expected that \$136,000 for the steel plant or about \$1,378,000 in all. He desired an order to transfer the assets so as to give the creditors a cash dividend of 25 per cent. The Unzicker claim, already reported in Motor Age, caused a rumpus when it was desired to set aside \$65,000 in New Jersey to pay a 25 per cent dividend if the claim is allowed. Judge Curtis suggested that the various interested attorneys get together and decide upon the form desired, which was done and the order was issued. An order also was entered by Judge Curtis that the Unzicker claim be stricken from the Connecticut records. Judge Curtis also granted the petition of the receivers to continue business for 4 months and it developed that reorganization of the company may be reasonably expected within the time allotted, at least according to the statements of the receivers.

DISCUSS THE '09 RACE

Foreigners Talk Possible Changes in Rules—Dismountables May Be Used to Save France

Paris, July 20—Before the last of the racing cars had left Dieppe the racing board of the French club had sent forth a notice calling its members together to consider what steps should be taken for the grand prix of 1909. The meeting which is announced for next week will have under consideration the regulations for the next annual event and will consider what offers of courses may have been made to it. It is doubtful if any definite arrangements can be made until the International Conference of Recognized Automobile Clubs has decided what rules shall be in vogue for next year, but it is possible for the French constructors to decide what they will support and to bring the matter up for decision at the first meeting of the European body. French constructors recognize that they have been beaten, some of them by the tire and rim element, others by defects in their overspeedy racers, and if early preparation can prevent a repetition of the disaster of July 7 the Frenchmen will certainly not be lacking in the next races.

Two possible changes present themselves: That the engine bore should be still further limited to reduce the speed to limits that tires can be reasonably expected to maintain, or to allow the use of dismountable wheels in order that it may be impossible for such accidents as happened to the Renault cars to again throw down an entire French team. The French sporting commission has a hankering after the highest speeds in order to impress the public; it will therefore hesitate to materially reduce the power of the cars. Some of its most prominent members have a deep-rooted objection to the use of the dismountable wire wheel, commonly seen on Brooklands track and would not admit it except under strict necessity. But the necessity appears to have come in the last defeat. If dismountable wire wheels, therefore, or a change of wooden wheels under exceptional circumstances can save the situation, it is certain that they will be allowed.

It is of some interest to note that the dismountable wheel, which is nearly invariably of the metallic variety, originated in England, and since the opening of Brooklands track has been very prominently employed there for racing cars, the change of a complete wheel being effected in considerably less time than is necessary for the dismounting and remounting of a ready-inflated tire and rim. As the hub of the wheel was never changed, only the outer shell being taken away, fastening being by means of a single key, the English claimed that the device should be admitted in the French race. To this, how-

ever, the racing board would never agree, maintaining that the wheel was a part of the car and as such should be rendered unchangeable.

Now that they have suffered defeat very largely through their refusal to allow the changing of wheels, there is a sudden change of opinion, many of those in authority being willing to allow the use of the British device. It is never safe to prophecy, but the chances are that next year instead of rims it will be wheels that are changed, and one element of chance will thus be eliminated.

Dieppe has about one chance in fifty of again being the scene of a grand prix race. The district will certainly put in its claims and they will be considered by the club, together with probably fifty others; but as there is now no special love for the scene of their defeat, and as innumerable difficulties have arisen with the authorities on the question of roads and general organization, it is more than probable that a new site will be chosen for 1909. Happily there are so many of them in France that it is not merely a question of picking a good set of roads, but also of discovering which district can give the largest indemnity and assist most powerfully in the organization of the contest.

MAY POSTPONE CLASSIC

Paris, July 19—Owing to the Ardennes race and the Florio cup contest, both of which were announced under grand prix rules, being scheduled for closely approaching dates, it has been decided to abandon the former event this year in order to assure the success of the latter. The classic Ardennes race was originally announced for August 12; constructors thinking the interval between the grand prix and the Belgian race too short, a postponement was made August 27. This, however, clashed with the Florio cup contest announced months ago to be run on September 24, and a protest was made by the Italians. After a conference between the two parties it has been decided to alternate the two races, the Italians holding a speed contest for the Florio cup next September, and the Belgians running their Ardennes race in 1909. The following year it will again be the turn of Italy, and so on each year. By this arrangement there will be but two important speed tests in Europe each year under the international rules, first the grand prix and second the Ardennes or the Florio race.

CENTURY CAR'S RAMBLES

Boston, Mass., July 27—The Premier hundred century car now is in this city, grinding out its daily 100-mile trip. It will stay here for some time and after leaving Boston will visit New York, Philadelphia and other eastern cities before going home. It went through the Glidden tour and after the finish at Saratoga came to Boston, stopping at Springfield.

GOOD ROADS MEN MEET

Exponents of Convict Labor on the Highways Elect Officers and Ride Their Hobby

Grand Rapids, Mich., July 25—With nearly 100 members and perhaps 200 visitors present, the first annual convention of the National Convict Labor Good Roads Association was held in this city, July 22 to 24, the following officers being elected for the next year: President, Horatio S. Earle, Detroit, Mich.; vice presidents, Isaac B. Potter, New York; Curtis Hill, Columbia, Mo.; A. N. Johnson, Springfield, Ill.; secretary, Frank W. Boughton, Grand Rapids, Mich.; treasurer, Michigan Trust Co., Grand Rapids, Mich.; organizer, Roscoe P. Hogan, Grand Rapids, Mich.

Although the matter of deciding upon a next meeting place was left to the executive committee it is learned from an authoritative source that the place most favored and the one which will probably be chosen is Kansas City, Mo. At present the association has 600 members in Michigan and a large number of other states. Mr. Hogan will go at once to Chicago in an attempt to strengthen the association in Illinois.

The large number of visitors is due to the fact that invitations had been extended to all the highway commissioners of Michigan to be present. Many responded for the good which they secured from the instructive papers and addresses. On Wednesday the visitors were registered at the Morton house and were given badges. The convention was opened in Press hall at 10 o'clock in the morning, the Rev. H. B. Bard, of Grand Rapids, delivering the invocation. E. A. Stowe, president of the board of trade, made the address of welcome. Mayor Ellis was on the program for an address of welcome but was unable to be present. Following came addresses from Horatio S. Earle, of Detroit, president of the association, and Hon. George Clapperton, of Grand Rapids.

In the afternoon Frank F. Rogers, of Lansing, deputy state highway commissioner, discussed "Gravel Roads." Howard H. Gross, of Chicago, president of the Farmers' Good Roads League, talked "National Aid for Highways"; A. N. Johnson, of Springfield, Ill., state engineer, told of "Convict Labor in Illinois"; Horatio S. Earle discussed the "Equity of County Road System." At 7 o'clock in the evening an excursion was run to Otawa beach.

Thursday morning's session was occupied with the following addresses: "Better Road Surfacing Material," C. C. Rosenbury, president of the Business Men's Association of Bay City, Mich.; "Tar Veneer Macadam Roads," Edward W. Hines county road commissioner, Detroit, Mich.; "What We Hope to Do In

Wisconsin," Professor W. O. Hotchkiss, state engineer, Madison, Wis.; "Local Road Promotion," Philip T. Colgrove, Hastings, Mich.; "Benefits of County Road System," John W. Bradford, county road commissioner, Manistee, Mich. In the afternoon the following addresses were given: "How and How Much Shall We Expend on Our Highways?" R. J. Taylor, county road commissioner, Cheboygan, Mich.; "Road Conditions in Missouri," Curtis Hill, state engineer, Columbia, Mo. Congressman Gerritt J. Dickema, of Holland, Mich., was also one of the speakers.

A large number of impromptu talks were given by the members of the association and by many of the visitors present. At the close of the sessions a piece of state reward good roads in the vicinity of Grand Rapids was examined. The visitors were much impressed with the thoroughness of the work.

For the purpose of furthering the work of the association a resolution was adopted calling for the employment of convicts on good road work. This resolution, which was introduced by George E. Rowe, of Grand Rapids, called attention to the fact that convicts are prone to consumption through close confinement and that the work done on the roads is of far more advantage to the state than the work done on contracts for which the state receives a very small remuneration. A resolution also was adopted endorsing the stand taken by both national political parties in the matter of road work.

CASH A \$7,000 RAIN BET

New York, July 27—It will be remembered that the coterie of multi-millionaire racing enthusiasts summering at Long Branch, resolved to take no chances of unfavorable weather making the meet they promoted at Elkwood park on the Fourth of July a financial failure, hit upon the expedient of insuring themselves against a storm on that day. Accordingly by the payment of \$1,400 premium they secured at the Lloyds' in London insurance to the amount of \$7,000 against 1-10 inch rainfall on that day. The prudent promoters were easy winners of the 5-to-1 bet on the ill-temper of Jupiter Pluvius that day. The Lloyds' brokers pay their wagers, as a \$7,000 check received this week attests. The Vanderbilt cup commission has invariably insured itself against damage suits and similar insurance was taken out by the Briarcliff race promoters. In view of the outcome of the precaution taken by the Long Branch race givers, it is not at all unlikely that in future many of the big motoring events will be thus insured against financial loss. Race promoters, grand stand builders and other holders of privileges will probably seek the Lloyds to make their good things sure things. Even dealers may deem it wise to insure against loss of sales by rain during carnival week. In fact, there is no end to what the motoring fraternity may do.



The Readers' Clearing House



THE IDEAL MOTOR CAR

La Salle, Ill.—Editor Motor Age—In a discussion of the ideal motor car it is quite impossible to generalize to the extent that the conditions under which the car is to be run may be eliminated. An ideal car for a bachelor of moderate means would be far from the ideal of the wealthy man with a large family. The car most suitable for the busy business or professional man would be unsuitable for a man of leisure who desires to entertain or tour. Assuming, however, that the ideal car is one which most fully conforms to the requirements of both classes, and fully realizing that such a car never can quite fulfill the most exacting requirements of either, I have endeavored to compile specifications for a car such as at present is not built, but which would probably, at least in my opinion, fulfill the greatest number of requirements of convenience, utility, comfort, ease of handling, construction and cost of upkeep, and at the same time have all the speed and durability necessary for the most exacting service. Starting with the power plant: I would suggest a four-cylinder $4\frac{1}{2}$ by $4\frac{1}{2}$ -inch engine, with cylinders cast separately or in pairs, with copper waterjackets, cylinder castings machined on outside, larger valves than usual and located in offset pockets, no overhead valves, rocker arms, etc. The power plant would be of the unit type, with engine, clutch and gear box in a single assembly, but with provision for removing either without disturbing other parts when necessary. As an alternative to this arrangement, I would make the gear box a unit with rear axle and differential, in which case a construction of the rear axle along the lines of the De-Luxe car would be advisable. In either case, straight line shaftdrive fully incased, with one universal joint running in oil should be used. The engine bearings would be white metal and adjustable; connecting rods of the marine type; large inspection plates; one-piece crankcase of aluminum-bronze; transmission, four-speed and reverse selective type, direct on high, similar to that of the Locomobile; cone clutch, interconnected with emergency hand brake only; running brake independent of clutch, of large size and ample leverage, operating on hubs; hand brake may be of internal expanding type, both to be compensating and arranged to operate with equal pressure in either direction; pedals to be push type, disappearing in raised footboard without slots; cooling, by means of large cellular radiator without fan, natural circulation, assisted by direct gear-driven centrifugal pump; piping, large and arranged so as to facil-

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.

itate natural circulation in case of pump becoming inoperative. Two simple systems of lubrication should be used, one for the engine, using a light oil of high grade; the other for the transmission, shaft, universal joint, differential, and rear axle, using heavy oil. The engine lubrication should be constant level splash; feed from single pump to single dash sight feed, from there by the individual leads to each main bearing of shaft. The pump should deliver a constant stream, supplied from a reservoir below the crankcase and filtered, the capacity of pump to be fully that of the several leads to insure pressure in case of any stoppage in pipes. The failure of indication in the sight feed will then indicate that the reservoir is empty; but an ample supply will still be in the crankcase to last many miles. The transmission lubrication should be by means of individual pump and sight feed oiler located under the hood, similar to many types in use, with one tell-tale oiler on the dash to indicate operation of same. One lead to the propeller shaft casing and one to the transmission probably would be all that would be found necessary to sufficiently lubricate the entire assemblage aside from the engine. The gasoline tank should hold from 12 to 15 gallons and occupy the entire space under the front seats. The supply to the carbureter should be by gravity preferably. If on account of low seats pressure is necessary it should be by means of a pump to a small auxiliary tank under the hood, similar to the system used in the Matheson or Brush runabout, with overflow to main tank.

Control should be by means of spark and throttle levers on the steering wheel and foot accelerator, the accelerator to be similar to that used on the new Chalmers-Detroit Thirty. Means of minute adjustments of air and gas should be placed on the dash. The carbureter should be water-jacketed and with automatic auxiliary air supply and annular float feed. Ignition should be jump spark by means of high tension magneto with self-contained distributor, with storage battery and Atwater Kent system for starting and reverse. There should be a double system of plugs over the in-

let valves. The suspension should be by means of long, wide, semi-elliptic springs in front and three-quarter elliptic in the rear, similar to Isotta Fraschini, Renault, Chalmers-Detroit Thirty, etc. There should be shock absorbers all round. The front axle should be drop forged I beam, dropped, and located in front of the radiator; the rear axle should be of the floating type with special reinforcing housing construction to prevent sag. There should be roller bearings or H. B. ball bearings in rear live axle and wheels. In the way of tires and wheels, I should say: Front, 34 by $3\frac{1}{2}$ inches; rear, 34 by 4 inches or 34 by $3\frac{1}{2}$ inches; H. B. ball bearings on front wheels, shaft, and rear axle, also in transmission; roller bearings in rear wheels. The wheel base should be between the limits of 105 and 115 inches; the tread 54 inches; clearance 11 inches; removable dustpan.

The question of body cannot be settled as easily as it depends almost entirely upon the kind of use to which the car will be put. It probably would be best for the manufacturers of the ideal car to make two forms at least of the body, either of which would fit the same ideal chassis equipment. One of two of these bodies should be the regular roadster form, with mechanics' rumble seat, which would best be made to disappear when folded, or else should be removable, together with a trunk and tool box. The other body should take the form of a small tonneau, seating not over three, located as far in front of the rear axle as possible. This could not be patterned after a better model than that of the Stearns baby tonneau, with but one side entrance, and the left front seat set back of the line of the driver's seat. Ample baggage storage space should be arranged back of the rear seat, and a removable mechanic's seat should be optional on the running board. In all cases the seats should be low, in rear as well as front, and the driver's seat and the steering post should be low enough to facilitate but not compel the semi-reclining position preferred by many drivers.

In color I believe that for the body, or any portions not subject to contact with oil or grease, that an ecru-grey or dust color with suitable stripings would be the most satisfactory and best wearing color. For wheels and running gear there is probably nothing better than bright red, with black stripes. The ideal car as described



herein should be built to sell for not to exceed \$1,000 to \$1,250, without lamps, top and other accessories, and should weigh less than 2,000 pounds. In the above description there is nothing radical, nothing new, and nothing impossible—not even the cost, and the requirement that workmanship and materials must be of the best quality. All or most all of the requirements may be found individually in one or more cars now on the market. I fully hope and in fact believe that some day some manufacturer will assemble all these good points, and eliminate all the bad or useless ones, and then the result will be what the writer considers an ideal car so far as present knowledge of gas engine construction permits the engineer to design.—V. A. Matteson.

DEFENDS PIERCE SYSTEM

Birmingham, Mich.—Editor Motor Age—In Motor Age of July 9 the Readers' Clearing House had an article headed, "Criticizes Ideal Lubrication," in which René Le Luomier criticizes the well-known Pierce-Arrow system, it having been written up in a June issue of Motor Age in which the writer called it the "Ideal Lubrication." Being the driver of a six-cylinder Pierce, I of course hate to hear of anyone who does not think it is perfect in every respect. I would like to state also that the lubricating system of this car practically caused us to purchase the car. Mr. Le Luomier states that one cannot tell by the oil dash gauge whether all bearings are securing oil or not, although it can be seen that the oil is well up in the tank. If the oil were not feeding to all bearings it would rapidly rise in the gauge until it overflowed the small vent pipe K placed at the top of the gauge for this purpose and by this means the driver would know something really was wrong. As for any of the tubes TTTTTT clogging and prohibiting perfect flow of oil, it is well nigh impossible. Were any foreign substance to find its way to the tank it would naturally settle at the bottom of the tank and around the base of the strainers AAA, but would in no way hinder the oil from finding its way through the top portions of these strainers. Tubes TTTTTT are of extra large diameter and were the oil cold in starting as in winter, it would flow freely by gravity to the bearings. The tank and tubes also lie within an inch or 2 of the exhaust manifold, with greater tendency to make the oil flow easily. The strainers AAA are very easily removed for cleaning and anyone who took any care of his car whatever would see that these strainers were rinsed in gasoline at least once every 500 miles.

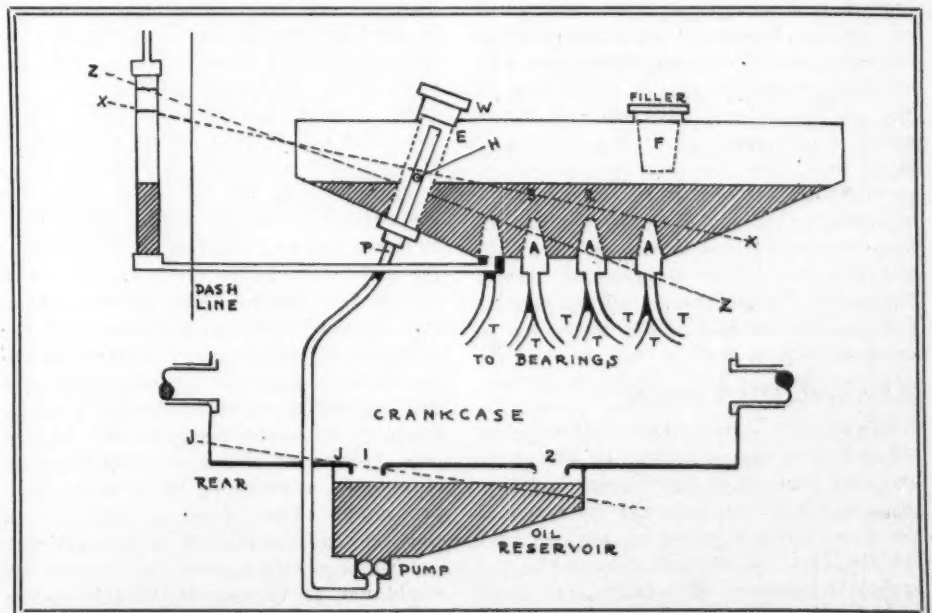
The oil in this system is strained three times. First upon being put in the tank and twice under ordinary running conditions. It is first strained at the filler plug F, and then each time it goes its rounds at AAAA, and again when the pump returns the oil to the tank through E by



means of holes H in side of riser P. As a mileage of but 250 to 300 is only expected of the supply, which is 6 pints, there is not much chance that the oil would become so saturated with foreign substances that it would prevent the perfect working of the system. Line XX in the diagram indicates the level of oil when the car is stopped upon a hill. Mr. Le Luomier states that when the car is stopped in this position oil would overflow the top of the reservoir at opening I in bottom of crankcase and fill up the rear portion of case as at JJ, the case having no partitions, and the oil still flowing by gravity down through the bearings would add to the amount already in the case, so that upon the motor again being started the rear cylinder would foul and the forward bearings would run dry as a result; this is only partially true. A slight amount of oil might run to the rear of case to be sure, but the minute the motor was started the pump would supply the tank above as usual, and the oil would flow to the forward bearings as well as those in the rear and lubricate them. Hence, I cannot see why Mr. Le Luomier says that the "forward bearings would run dry" no matter what grade the car stood on. And supposing the grade to be as absurd as line ZZ might indicate and the forward tubes 1 and 2 and those beside them were to be uncovered by the oil, even then sufficient oil would remain in those tubes between the tank and the bearings to thoroughly lubricate them until the top of the grade had been reached. I do not see either Mr. Le Luomier's idea in placing the oil tank upon the inside of the dashboard under the hood, where he says "it would be kept

warm," as it could not be placed in a warmer place than in the one it now occupies above the exhaust pipes. In my estimation, his idea of having a wire basket like that of a carbide generator, setting in the tank, through which the oil would be strained upon delivery from the pump, is also absurd. I would ask him what the matter was with the strainer E, which is fully 1¼ inch in diameter by 4 inches long and through which all oil has to pass when delivered back from the pump. Strainer E is also easily removed for rinsing in gasoline by simply removing cap W on top of tank. Three-fourths of the wire basket would have no use whatever, as the straining only needs to be accomplished at the immediate point of delivery, with enough extra wire screen to allow for part of its being covered by any accumulation of dirt without hindering the flow of oil altogether. Also Mr. Le Luomier's method would only strain the oil once as against three times as now.

Line XX also clearly indicates that all tubes have an equal chance for a supply when the car is on a grade, as the bottom of the tank is V-shaped and all tubes lead from the bottom of this V, as shown in diagram. It will also be seen that a very unusual and absurd hill would have to be encountered before the openings of the tubes at the tank would be uncovered by the oil at all, which shows that hills do not materially affect this system to any great extent. Line XX at the gauge would only be the level of the oil in the gauge when the car was climbing a hill, but any sane man would not take this as an indication that his oiling system had gone wrong. A man doesn't usually measure the amount



J. S. B.'s EXPLANATION OF PIERCE OILING SYSTEM

of gasoline in his tank while his car stands upon a hill, but waits until he reaches the level once more, nor does he examine the gauge in the Pierce to see how his oiling system is working when on a hill, knowing that hill would affect the level in the gauge. The distance from hole No. 1 in the crankcase to the rear of the case is considerably less than 12 inches, and I think Mr. Le Luomier will see that in this short space very little oil could be pocketed, and I doubt very much whether this amount would be sufficient to let the rear crank dip at all, if oil did pocket here. I doubt personally whether the bottom of the Pierce crankcase is near enough to the throw of the crank to allow it to dip even though there were a considerable amount of oil as at JJ, for the Pierce not being designed to splash at all may have a greater space between the throw of the crank when it is in a downward position and the bottom of the case than in a motor designed to use the splash for lubrication. I do not know this to be a fact, for I have had no occasion to tear down the motor as yet, but as I have never known of a Pierce fouling even after a season or two of running, and as I have had no trouble whatever from this cause, I certainly disagree with Mr. Le Luomier in what he says about the fouling question. Mr. Le Luomier's idea of a V-shaped crankcase draining to the oil reservoir might do away with any splash if it does occur, but if a Pierce never fouls, why the change, Mr. Le Luomier?

As to the idea of placing a series of valves in the supply pipes and connecting them with sight-feeds upon the dash, I would say let well enough alone, for any complication in the parts of a motor car usually means trouble. The cry is for simplicity in these things and that's what the Pierce gives a man in the shape of a perfect oiling system, the most essential part of a motor car, almost. As all the bearings in a Pierce get an equal amount of oil Mr. Le Luomier's sight-feed idea is certainly absurd and superfluous and why all these valves he speaks of to clog up and for someone to shut off and forget which would result in "dry bearings" then, sure. Mr. Le Luomier had better purchase a Pierce-Arrow and enjoy its oiling system, forget those foolish sight-feeds, force feeds and blue smoke at the nozzle and all those other disagreeable things. I'm not in the business of selling Pierses, but I drive one, and that's everything to my mind.—J. S. B.

CLEANING OFF CARBON

Minneapolis, Minn.—Editor Motor Age—I find it to my advantage to add about one part lard oil to three parts kerosene to clean the carbon from the cylinders. I shoot the mixture, using an oil gun, into the air intake of the carburetor while the engine is running. Will Motor Age state what is the advantage of the lard oil, and what would be the correct proportion of

lard oil to kerosene to produce the best results?—B. Sikes.

Motor Age does not know of any advantage in mixing lard oil with kerosene to wash out cylinders. Neither would there be any advantage in shooting the mixtures while the engine is running as the kerosene which enters the combustion chamber will burn up. Motor Age would recommend instead the pouring of a tablespoonful of kerosene into each cylinder after each day's run, leaving it in there over night. This will tend to cut out all gummy oils and prevent the formation of carbon.

GASOLINE LOCOMOTIVES

DeRidder La.—Editor Motor Age—The Milwaukee Locomotive Mfg. Co. makes a gasoline locomotive of about the kind the Imperial Copper Co. was inquiring about through the Readers' Clearing House recently.—T. H. Sessions.

Clyde, O.—Editor Motor Age—I believe the Imperial Copper Co., of Silverbell, Ariz., can get what it wants from the Sheffield Car Co., Three Rivers, Mich. This concern has already put out about 3,000 of what might be termed "railroad motor cars."—E. W. Roberts.

New York, N. Y.—Editor Motor Age—The Hall Motor Vehicle Co. no longer builds motor cars but has for some time been making the Hall gasoline locomotive for industrial railroads.—Hall Motor Vehicle Co.

FUEL CONSUMPTION

Pleasant Lake, Ind.—Editor Motor Age—Will Motor Age answer a few questions regarding fuel consumption? Compared with similar cars in general, what can be regarded as a fairly economical consumption of gasoline per 100 miles for a 2,500-pound touring car with 6 by 7-inch opposed motor when carrying five passengers on average country roads? With car and load identical in other respects, what per cent more fuel, if any more, will be used by four-cylinder motor than two-cylinder opposed of same rating, traveling same road? Compared with 6-inch by 4-inch opposed motor, about how much more fuel will be required by good 4½ by 4½ cylinder vertical two-cycle motor, other conditions being the same? Is there any preparation to be had which will prevent or lessen the accumulation of rust in cooling water in a motor car?—C. A.

Five to 6 gallons would be an economical showing for this distance, but the consumption would naturally vary according to the amount of low-gear work that was necessary, as well as with the character of the road surface. On a good road, such a car as you mention ought to be capable of covering 17 or 18 miles to the gallon. The difference between this and the consumption of a four-cylinder motor of equivalent power in the same car would not be very great, though readily perceptible. Doubtless such a car would average 15 or 16 miles to the gallon un-

der similar circumstances. As compared with the two-cylinder opposed horizontal motor of the four-cycle type, the four-cylinder two-cycle motor might use anywhere from 10 to 50 per cent more fuel, according to the efficiency of its design. Unfortunately, the two-cycle motor has not been brought to the same degree of standardization that characterizes the four-cycle, so that it is naturally difficult to make comparisons of this kind that will hold good generally. It is safe to say that the two-cycle four-cylinder motor will require considerable more fuel than the two-cylinder four-cycle, as the two-cycle is not as economical as the four, and adding to the number of cylinders always tends to increase the consumption, but just what this excess would be cannot be stated definitely, as two-cycle motors of some makes are very much more economical than others. There are numerous boiler compounds on the market that are intended to prevent scale and rust on the interior of a boiler and Motor Age has no doubt they would be found equally effective in the case of a motor car radiator. Probably more so, as the conditions in the latter are not so bad, in that the water seldom actually boils away to any great extent, it is noticed.

AUTOGENOUS WELDING

Pleasant Lake, Ind.—Editor Motor Age—I have been very much interested in the articles on "Autogenous Welding" and can realize fully the great value of this process in making difficult repairs which any motorist is liable to be in need of, and hope Motor Age can give us more information in the way of "Cost of Autogenous Welding Equipment, Upkeep, Practice and Skill" required to do good work, and, if possible, I hope Motor Age may induce a few firms doing this kind of welding to advertise regularly in Motor Age, and thus enable any of us who may be in need to know at once where we can get such work done promptly and well by repairmen.—C. Avery.

There are already two or three firms who are making a specialty of motor car repairs by means of this process and some of the work that they have accomplished is certainly eye-opening. In one case that was called to the attention of Motor Age recently a piece had been blown out of the interior of the combustion chamber of one of the cylinders of a four-cylinder motor. Under ordinary circumstances, there would have been no possible alternative but to scrap the twin-cylinder casting and supply a new one—rather an expensive repair. With the aid of a cutting burner, however, a piece was cut out of the jacket over the place where the injury had resulted to the combustion chamber of the cylinder. The piece that had been blown out was fished out of the jacket, cleaned up and welded back into place. The piece that had been cut out of the jacket to gain access to the repair was then welded

back into place and the job was complete; time, considerably less than would have been required to dismantle the motor, remove the defective casting and replace it with a new one, as the work could be done without the necessity of taking the motor down. However, it is usually customary to remove such a part as a cylinder, as it is considered better to preheat such a large piece before welding it in order to avoid setting up internal strains in the metal. Referring to your query as to information concerning the cost, equipment, upkeep, practice and skill required in autogenous welding, *Motor Age* will have to request the firms that are making and using the apparatus to come to its aid. It must also be borne in mind that the process is of comparatively recent origin and its advantages are not generally known. When they are, a great many breaks that now mean expensive replacements will be made good for very little and there will be few, if any, hopeless jobs. The suggestion that firms which are doing this work should make the fact known to the body of motorists at large is one that, if followed, should result to the benefit of all concerned.

MOTOR CAR LICENSES

Tryon, Okla.—Editor *Motor Age*—Will *Motor Age* state whether or not it is necessary to have a number on the car or secure a license from the states of Kansas and Colorado, to tour through those states from Oklahoma?—J. K.

The motor law of Kansas provides that a non-resident motorist does not have to take out a Kansas license while passing through the state. Colorado is one of those states that has no statutes regarding motor vehicles and *Motor Age* thinks you had better consult the officials of the municipalities through which you pass.

REPLACING OF PARTS

Port Norfolk, Va.—Editor *Motor Age*—I do not recall having seen in *Motor Age* any warning to would-be purchasers of motor cars relative to their selecting a machine the manufacturer of which not only furnishes duplicate parts at reasonable prices, but who exercises the same care in filling orders promptly and well as they do in soliciting purchasers of the machine. About 3 weeks ago I sent to one of the best known manufacturers in this country the price of a flat valve and stem for a carburetor. A week later I received the valve. I addressed another letter and at the end of another week received the flat. I am writing today in regard to the stem. Further, I have observed that many young men, especially in small towns, are enticed into buying a machine by the big discount offered to agents. Aside from the fact that some of the concerns offering these large discounts frequently go out of business, any purchaser of a type of machine, the construction of which is new to his community, is more or less handicapped, and should the manufac-

turer go out of business, he is up against it for duplicate parts. It is well known that motor car repair establishments in small towns usually represent certain machines, and in many instances they do not take the interest in repairing other makes that they should. Would it not be well then that every one desiring to buy a machine should inquire of his friends their experience in getting supplies from the manufacturer of the machine which he has in view?—R. F. Hargraves.

The point that you call attention to has been constantly harped upon for the past 2 or 3 years in these columns whenever the question of buying a car has been at issue, and the experience of those who have invested in any of the numerous makes that have sprung up and disappeared within the last 3 or 4 years have had this brought home to them very forcibly. This, however, has no direct bearing on the unfortunate experience that you detail in your letter with regard to obtaining a small replacement part, in view of what you say in regard to the standing of the firm in question, and it is to be hoped that such experiences are not common. There has been a great deal of progress made in the past 2 years in the matter, not only of supplying replacement parts, but of doing so at reasonable prices, and there seems to be no doubt that as time goes on this will finally be brought down to a basis where it is on the same plane with that of any other business.

REVERSE CAN BE USED

Amana, Ia.—Editor *Motor Age*—Is it safe or permissible to use the reverse band in a car with planetary transmission as a retarder when going down hill with the high-speed clutch engaged, using care not to apply the band too tight while doing this?—Iowa Reader.

It is perfectly permissible, although not good practice, to use your reverse on a planetary transmission car as a brake, but good judgment must be used in not applying that brake too strong. The better practice is to have your other brakes sufficiently tight and useful to keep your car from running away going down hill. The reason for putting the reverse pedal on the floor of a planetary transmission car is to enable you to use it as an emergency brake when occasion demands.

ADVICE ON OVERHEATING

Lynn, Mass.—Editor *Motor Age*—I note in the issue of the 23d an inquiry from E. S. Fackler and am surprised that he should have trouble with his St. Louis car overheating, as my model 16 car has proved particularly good in that respect, so good in fact that at one time I was able to run home without the pump working by simply stopping every 1½ to 2 miles and filling up with fresh water, of course being very careful to keep the spark well advanced and the throttle as low as possible. I advise the correspondent to open his crankcase, set the cranks on dead cen-

ter and then note the position of the spark lever when the coil commences to buzz, mark this point and run his car with the lever as far forward from this point as the engine will stand without knocking. Then if he has the same carburetor, standard, and connections as mine he will find it to his advantage to connect a coil spring around the intake pipe and carry forward to the first link of the throttle levers, thus helping to keep the throttle back if it has any tendency to stick and also taking up back-lash in the lever connections. Also if he will change his present timer for a Bemus ball contact timer he will probably find, as I did, that he can run his car on a much lower throttle and that it will run smoothly at from 2 to 4 miles an hour slower on the high gear.—E. F. Bacheller.

AROUSED BY GLENCOE

LaSalle, Ill.—Editor *Motor Age*—To the average person of common sense, the Glencoe affair has a great deal of comic opera about it. At the same time the bullet that hit one of the occupants of Mr. Henderson's car was a real one, fired by a very real policeman, who, if he acted as most Glencoe policemen do, was hiding behind a tree before he shot. If Glencoe cannot enforce the state laws without building bumps, speed traps, artillery and police it is in a bad way. As a matter of fact, about one-third the would-be aristocratic population of Glencoe own motor cars which they speed up wonderfully as soon as they get out of their own royal domain. The other two-thirds live in hopes that they soon will have money enough to buy one and do likewise. These are the kind of people that are now backing up this shooting affair. Let common sense rule, and compel Glencoe to remove its bumps, guns and speed traps, and a few uniformed able policemen will be able to control speed to a reasonable extent. The driver who deliberately drives recklessly and at dangerously high speed should be stopped if possible, but not by Glencoe's dangerous methods.—J. S.

TIP FOR INQUIRER

Ogden, Ia.—Editor *Motor Age*—if F. C. C. who, in the July 2 issue of *Motor Age*, wanted a two-cylinder two-cycle engine, will write A. H. Yocum & Co., Reading, Pa., he will no doubt find what he wants.—W. R. Beck.

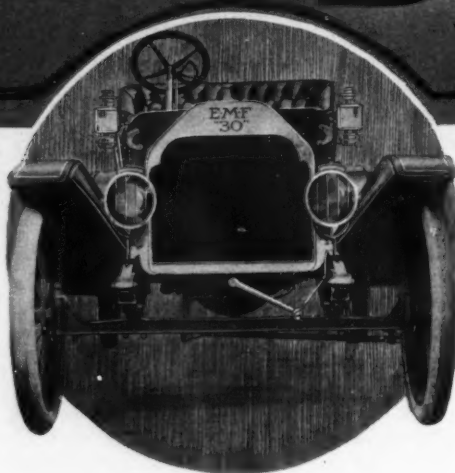
INFORMATION WANTED

Chicago—Editor *Motor Age*—The writer would like to know if *Motor Age* knows if there is on the market a gasoline motor with an expanding crankshaft, the expansion being brought to play by the crank being offset, thus giving the engine a stroke of say 6 inches on the fire and 4 on compression, this being varied under conditions. The idea is to gain all power possible from the explosion and at the same time do away with vibration. I know there is such an engine, but is there any being used by the manufacturers of Motor cars?—J. Carleton Abbott.



THIS is a season of surprises in the motor car business, and probably one of the sensations of the summer is the announcement of the Everitt-Metzger-Flanders Co., of Detroit, putting the E-M-F car on the market. While this has been long-looked for, not many were prepared for so many features and novelties. The specifications indicate a modern type of motor car entirely beyond the experimental stage, and the output for the first year, it is estimated, will be about 1,200 cars. In designing this car, the engineers have adopted all the modern practices of motor car design and eliminated the untried. This model A is the product of men long identified with the motor industry, so it escapes the stigma of being an entirely untried production. The efforts of the president of the company, B. F. Everitt, are to follow the footsteps of other builders who, by placing a good article before the public at a low price, can attain a low cost of production by turning out large quantities. The initial cost of dies, patterns, material and parts for one car would make the price of the first machine seem exorbitant, but by dividing the cost of these necessary adjuncts by a large quantity of cars the cost of each car looks insignificant as compared with the one-car proposition; the same thing applies to the overhead expenses. Five years ago the most optimistic motor car enthusiast did not dream that the year 1909 would produce a four-cylinder, 30-horsepower, five-passenger car, with selective type of transmission, quick detachable tires and double ignition system for such a price. Probably one great reason for this is the fact that it is not an assembled car, the new concern manufacturing motors, transmissions, axles, bodies, steering gears, etc.

The motor for the E-M-F car is of the four-cylinder four-cycle type, with cylinders cast in pairs, the waterjackets being cast integral. The valves, which are mechanically operated, are all on one side and are interchangeable. The cylinders are 4 by 4½ inches, low compression, with



SIDE AND FRONT VIEWS

FEATURES OF THE E-M-F

Motor—Four-cylinder, vertical; cylinders cast in pairs; bore, 4 inches; stroke, 4½ inches.

Horsepower—30.

Transmission—Selective sliding gear; gear case integral with differential housing in rear axle.

Speed—Three forward and reverse; direct on third.

Lubrication—Splash, automatic vacuum feed; oil reservoir cast integral with aluminum crankcase.

Ignition—Double system, consisting of magneto, quadruple coil, commutator and battery.

Cooling—Thermo-siphon; belt-driven, stamped steel fan mounted on engine.

Carburetor—Float feed, single jet; adjustable from driver's seat.

Clutch—Expanding ring type; leather-faced and contained in flywheel.

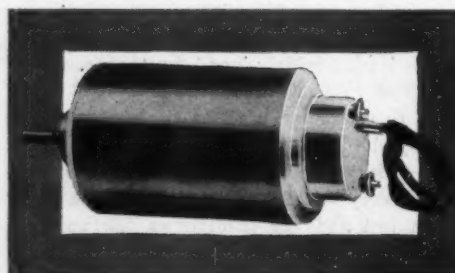
Frame—Pressed steel U-section; side members straight.

Body types—Five-passenger touring car; standard type runabout; single or double rumble roadster; demi-tonneau, four-passenger.

Other points—Wheelbase, 106 inches; tread, 56½ inches; weight, 1,800 pounds; gasoline capacity, 15 gallons; oil capacity, 1 gallon.

very large valves. These valves, made from a special steel, drop forged, are 2½ inches in diameter. The valve guides, instead of being a part of the cylinder, are machined and pressed into place, making it easy to replace them when worn. The valves are operated by a single camshaft on which all cams are integral with the shaft. This camshaft, after being milled, is case-hardened with cam surfaces and bearings ground to micrometrical accuracy. The inlet and exhaust passages are particularly large and unobstructed. The crankcase is cast from aluminum with stamped steel hand hole covers, and instead of having the supporting arms cast integral with it, it is carried on U-section pressed steel members, for which the claim is made while they are no heavier three times the strength is secured.

Cast integral with the crankcase is the lubricator tank and case for the magneto. All the camshaft and magneto gears are encased to eliminate any possible noise from this cause. The crankshaft which is offset ¾ inch from the center line of the cylinder is a three main bearing shaft made from special steel, drop forged. All bearing surfaces are ground and the flywheel is carried on a flange forged integral on the shaft. The flywheel is given a running balance at maximum motor speed to insure absence of vibration. All the crankshaft bearings, which are large and extra long, are made from special babbitt and the camshaft bearings are of phosphor-bronze. Each crankpin bearing is directly under its cylinder so that the connecting rod is not offset with the bearing. The connecting rods of I-beam cross section have a one piece phosphor-bronze bearing in the wrist pin and lined with die-case babbitt journals with babbitt bushings for the crankpin. These bearings are provided with shims so that they can easily be tightened through large hand holes in the bottom of the crankcase by removing the shims. The pistons, which are 5 inches long, are fitted with four rings; these rings are eccentric and ground on periphery-face to conform to the exact bore



THE E-M-F MAGNETO

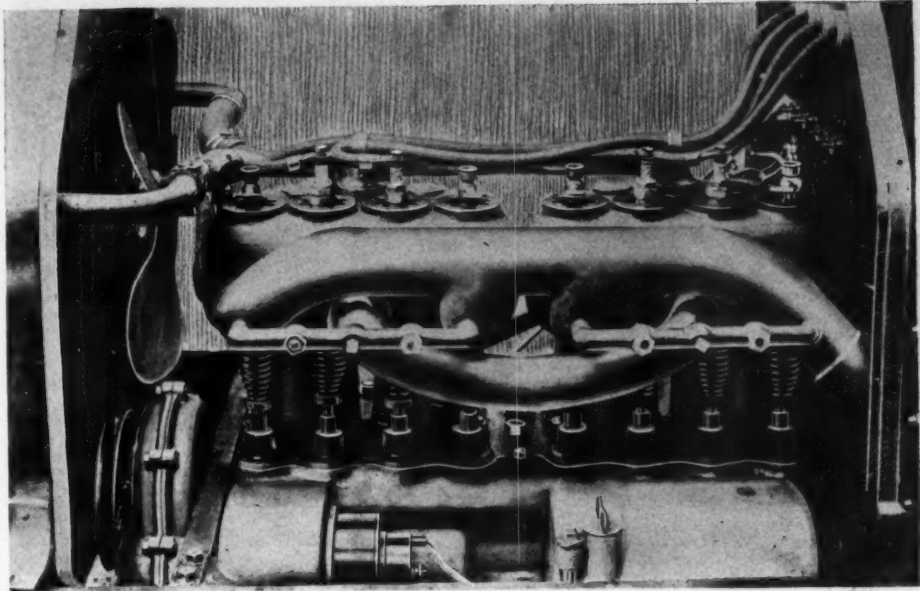
of the cylinder. Each piston fitted with its rings is weighted to insure a perfect reciprocating balance. The piston pin is hollow steel, case hardened and ground.

The automatic vacuum feed splash lubrication is used, and the oil tank is cast integral with the crankcase, a $\frac{3}{8}$ -inch tube being used to feed the oil, insuring it against clogging. One filling of the lubricator is said to be sufficient for 300 to 500 miles of travel according to the road conditions. For the steering knuckles, steering connections and other joints needing lubrication, not furnished from the lubricator, grease cups are provided.

A double ignition system, consisting of magneto for one end and battery coil and commutator for the other, is used. One feature of the magneto ignition is that the magneto fits into an oil and air-tight compartment cast integral with the crankcase and the magneto ignition is a part of the standard equipment. The battery coil and commutator ignition is the regular standard system with which everyone is familiar, except that there are no exposed wires, all connections being made through the back of coil box under the hood and being absolutely waterproof. The Lacoste type commutator is mounted on a vertical shaft driven by bevel gears from the camshaft. All bolts and nuts are prevented from getting loose by means of cotter pins, lock nuts and taper pins. A thermosyphon system of cooling is used and the fan is mounted on the motor and has an eccentric belt adjustment.

The carbureter is located on the right-hand side of the motor away from the exhaust pipes, where it is easily accessible, and is of the float feed type and adjustable from the driver's seat. A leather-faced expanding clutch, contained in the flywheel, is adjustable and is kept free from oil by means of an oil groove in the female part, with holes drilled to permit of centrifugal action forcing the oil out should any get in there.

A three-speed forward and reverse selective type sliding gear transmission is used. Following the most modern practice, this transmission is a unit with the rear axle and instead of using a square shaft for



SIDE VIEW OF MOTOR, SHOWING VALVE SYSTEM, MAGNETO AND OTHER FEATURES

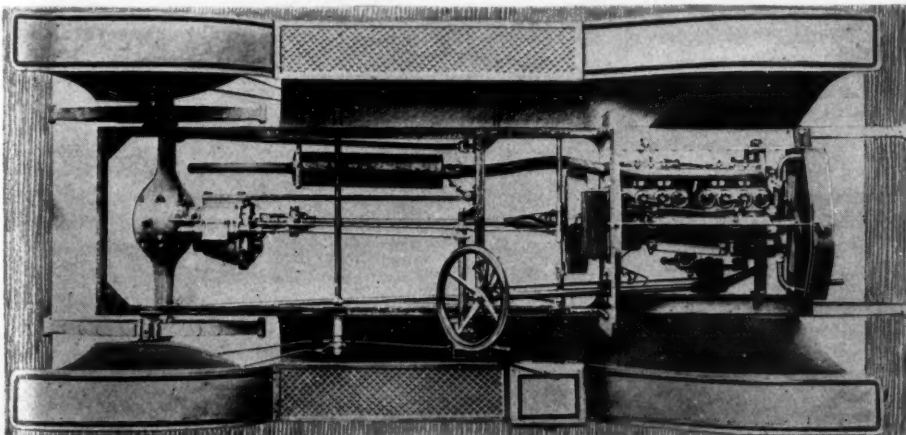
the sliding gears a round shaft with four keys integral, which has been case-hardened and ground, is used. The gear centers also are ground to insure a perfect alignment on shaft, silent running and facility for shifting. The high-speed gear, which is a direct drive, is a $3\frac{1}{4}$ to 1 ratio, with options on the other ratios if desired. A propeller shaft is fitted with double universal joints made from special alloy steel. Integral with the transmission case is a live semi-floating rear axle of exclusive E-M-F design; the right and left housings are made from sheet steel and heat-treated. Hyatt roller bearings in removable sleeves carry the load. In the differential, thrust bearings babbit metal, between ground steel washers, is used except in the case of the thrust collar for the drive pinion, which is taken care of by a Timken roller bearing. This rear axle is fitted with truss rods to give it extra strength. Acetylene oxygen auto-genous welding is used on this rear axle as well as on other parts of the car. The use of oil glands prevents the oil from the differential case and transmission case leaking on the shaft and axle bearings when the car is on an incline or the side of a road.

All gears, both differential and transmission, run in a bath of oil. The steering is by means of an irreversible worm and sector steering gear.

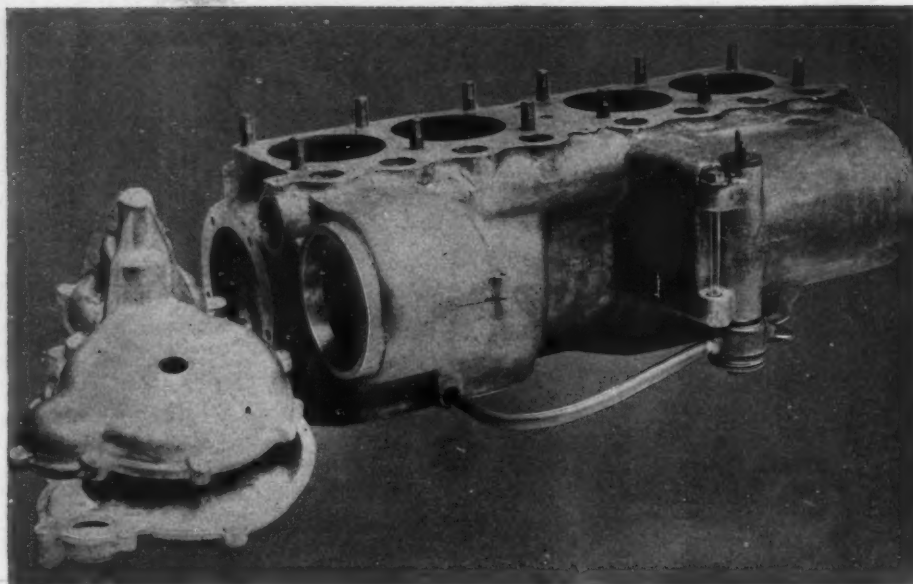
The front axle is of the I-beam type, drop forged in one piece, with spring seats forged integral and heat-treated. The spindles are offset back of the yoke posts to afford easy steering and the tendency to travel in a straight line. All steering knuckles and connections are drop forged and the joints are bronze bushed. The front wheels run on two-point bearings. Twelve-spoke artillery wheels, fitted with universal quick detachable rims with 32 by $3\frac{1}{2}$ -inch tires, are used. Semi-elliptic front and full-elliptic rear springs, 2 inches wide, are fitted and the rear axle strains are taken up by two radius rods.

The frame is of U-section rectangular pressed steel without offset side members. The spark and throttle control levers are beneath the steering wheel on the left-hand side and can be operated by the fingers of the left hand without releasing the grasp on the wheel. This leaves the right hand free for the emergency brake and the gear shift lever which is on the right-hand side of the car. The service brake and clutch are operated by the use of pedals, and an accelerator pedal is also on the floor. The four brakes of this car—two internal expanding and two contracting band brakes—are all on the hub of the rear wheel; the contracting band brake is lined with camel's hair, while the external expanding brakes are metal-to-metal. Both sets of brakes are double-acting.

In selecting materials for the different parts of the E-M-F car, special attention has been given to getting those which are best suited to its particular service and for strength. Nearly all parts are drop forged; those which are not drop forged are of pressed or stamped steel—no malleable castings are used at all, the controlling idea being to obtain the maximum



TOP VIEW OF E-M-F CHASSIS



MOTOR CRANKCASE CASTING USED ON THE E-M-F

strength with minimum weight. The chassis is furnished with four different types of bodies—touring car, runabout, roadster and demi-tonneau; the standard color will be red and the weight of the touring car is about 1,800 pounds with a gasoline capacity of 15 gallons and an oil capacity of 1 gallon.

RUSSIAN POSSIBILITIES

There is a country in Europe where the motor car business is flourishing. That country is Russia, and American motor car builders should not hesitate to go to some expense and trouble to find out for themselves what opportunity there is for them to compete successfully against the French and German manufacturers who now are doing a fine business in the land of the czar. The official records of the Russian customs department show that during the first 9 months of 1907 a total of 344 cars and chassis were imported while the total number of cars and chassis imported during the year 1906 was only 242. From the official records since 1902 and including the figures for the first 9 months of 1907, it will be easy to get a fair idea of the steadily increasing importance of the Russian market. Here are the figures:

Year	Chassis	Two seats	Four or more
1902	5	12	18
1903	8	17	35
1904	27	38	43
1905	18	36	57
1906	17	85	140
*1907	111	82	252

* Only 9 months.

In a recent article concerning the motor car business possibilities in Russia Victor Liberge, a member of the foreign commerce department of France and secretary of the Automobile Club of Moscow, wrote: "The cars which are most likely to interest the Russian buyer are runabouts of from 8 to 12 horsepower and touring cars of from 14 to 30 horsepower. The style of body ought to be a double phaeton for the small cars and for the big cars the double phaeton, the landaulet and the

limousine. The cars ought to be fully equipped with top, lamps, lanterns, horns, etc. Concerning the commercial vehicles, there is absolutely no doubt but that such vehicles are necessary in Russia and especially in and about Moscow. There are a great many concerns that are prevented from doing as much as they could because of the lack of facilities for transportation. I know of one concern which used sixty horses last spring and since has discarded them to use two German motor trucks instead, which it finds satisfactory."

FRENCH EXPORTS SHRINK

During the first 6 months of 1908 French motor car exports show a shrinkage of \$1,882,600 compared with the corresponding period of 1907. The amount of business done with foreign countries is also slightly less than during the first half of 1906, but is considerably better than during January-June, 1905. Thirteen nations are on the French trading account

and of these eleven have reduced the amount of their orders during the period for which returns have just been made. Russia has increased its orders for French cars 257 per cent, and the colony of Algeria also has shown a considerable awakening. England, the most important customer of France, has cut down the value of its imports of French cars during this half year to the extent of \$354,000. The loss here, however, is not great and can be accounted for by the general financial depression, the trading account with Britain still being better than in 1906 and 1905. During the first half of 1906 the trading account with the United States was more than doubled. Since then, however, there has been a steady decline, 1907 showing a drop of \$98,800 and 1908 a further decrease of \$97,480, making a total fall over the period of 2 years of \$195,280. During the first half of 1905 the French motor bill stood at \$558,600; the one for the current half year totals \$991,400. With Italy, Switzerland, Belgium and Germany the amount of business has dropped off considerably and is not likely to be regained with either Germany or Italy. The following table shows the amount of business done with the thirteen most important countries during the initial 6 months of 1908 and 1907. The total does not accurately represent the French exports, there being a number of other countries grouped in the government report and not included here. The table:

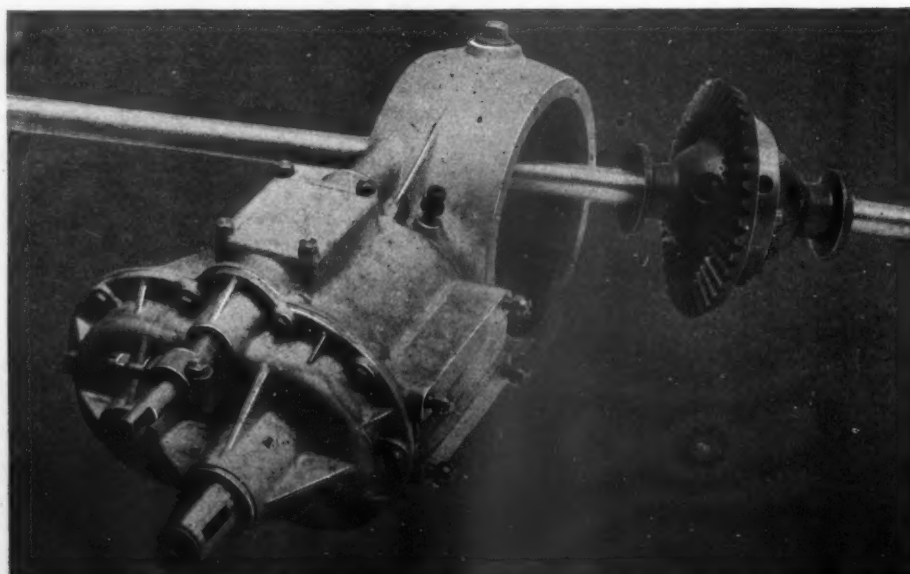
COUNTRIES SHOWING AN INCREASE

	1907	1908
Russia	\$156,600	\$402,800
Algeria	352,800	476,600

COUNTRIES SHOWING A DECREASE

	1907	1908
Great Britain	\$ 6,564,000	\$ 6,210,000
Germany	1,741,200	1,372,000
Belgium	1,876,600	1,087,200
United States	1,088,800	991,400
Argentina Republic	660,600	491,400
Italy	441,000	236,800
Spain	419,600	372,400
Switzerland	417,600	205,800
Brazil	405,600	250,200
Austria-Hungary	99,200	44,000
Turkey	10,800	10,000

\$14,034,400 \$12,150,600



ALUMINUM TRANSMISSION HOUSING AND CENTER MEMBER OF REAR AXLE

BUFFALO'S FACTORY ART AND SCIENCE

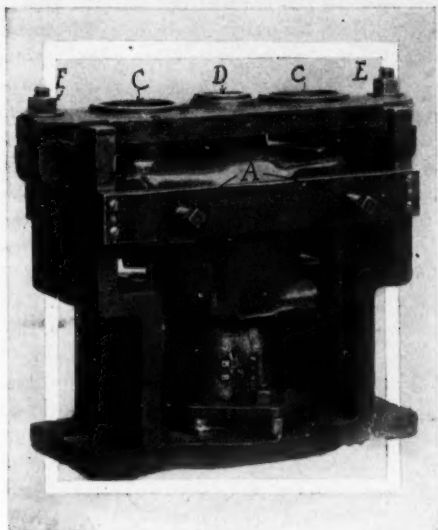


FIG. 1—JIG A

THERE is no city in the United States where local appreciation is more evident than Buffalo. With two mammoth plants within its jurisdiction, both running at high pressure, both employing very large numbers of hands, both with a fame stretching from coast to coast—as a team more representative of America than any other two manufacturers one can mention, it is not remarkable that Buffalo as a city is proud of its tenants. And to the motor car world and the men that compose it, the phrases, G. N. Pierce company, E. R. Thomas company, bring by automatic process of thought the word Buffalo in train and inversely the word Buffalo in general conversation will flash the unspoken connection involuntarily through the mind.

To the mechanical visitor both are unique, but in different ways. The plants exhibit the characteristics of two diverse schools of thought in organization. Each is a model of its school, each is successful, each is remarkable for the harmony of its operation, and yet to compare the two is as difficult as to compare in words primary physical sensation; and yet, after a day or so sojourning among the great Buffalo factories and meeting the men who do things at them, one begins to realize the fundamental difference is only a matter of personality, definite and indefinite respectively. Spend a few hours in the Thomas plant and you find it impossible to avoid realization that E. R. Thomas is the organization and that the enthusiasm of the organization, the pride of the product and the hopes of the future all primarily emanate from E. R. Thomas. It must be a great source of satisfaction to realize that these things be, a satisfaction that expresses itself most tritely in E. R. Thomas' description of his own genius. He says, "I know enough to surround myself with the right men."

The G. N. Pierce company has none the less ardent enthusiasm among its rank and

file, but the enthusiasm is the voicing of their feeling for the business machine that they have created, that they have watched grow and whose growth they have tended, aided and stimulated. The ego is there, but it is a great impersonal ego, as ardent, as effort-creating, but quite different to the impelling force behind the rival local plant—dominant personality. These matters are at the base of all organization. Possibly the things to be afterward written herein will demonstrate the operations of both, and as such prove interesting.

If any one asked to describe most tersely the greatest feature of interest of the Thomas-Buffalo plant the unhesitating and comprehensive reply is "tools." You rarely see as many well-chosen machine tools, as well grouped, and have yet to see more thorough special tool equipment. This matter of tools is especially interesting, too, at this season, for inasmuch as the Thomas company is making a departure in selling a six-cylinder car at an unprecedented price—and selling price is dependent solely upon productive cost—the methods employed in producing the goods cannot fail to be worthy of attention.

In dealing with factories and their product it is hopeless to completely cover either the plant as a whole or any unit of it—a general description lacks interest—and consequently the writer is bound to confine himself to a depiction of the productive high lights.

In the factory of the E. R. Thomas company the machine shop covering the sides of the hollow square of the plant is the "star performer," and it is here the greatest amount of ingenuity has been displayed in chasing the costs down, down, until the 1909 policy of the firm became possible. On every side one finds special jigs—jigs which are as ingenious in construction as in application, and a few of these we are permitted to describe and reproduce by the courtesy of the management. As entirely representative of the class of specialized tool work to be found are taken two sets of cylinder jigs—the one set used for finishing the cylinders used on the Thomas 60-horsepower Flyer and the other for performing the same functions for a triple block of cylinders used on the new six-cylinder model for 1909.

Fig. 1 deals with the large unit cylinder and exhibits two jigs used in connection with it. The mode of procedure is this: The casting, having been hydraulically tested for soundness, is bored on a converted lathe to grinding allowance. Being bored, it is located in jig A, by the barrel extension and by set screws AA, which are set to accommodate slight irregularity in the casting. The plate B, carrying steel bushings CC for valve chambers and D for jacket plug, is locked in position by the hinged studs EE, and floating boring tools do the rest with a heavy drilling machine

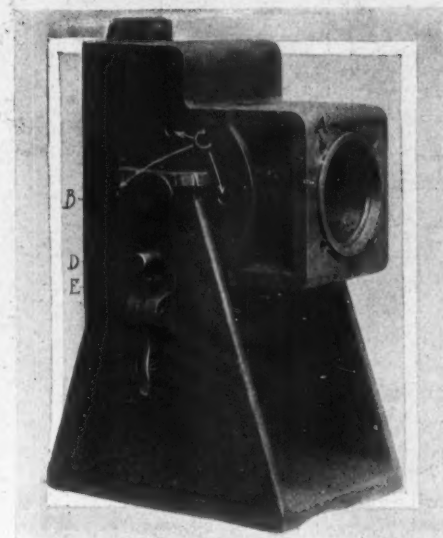


FIG. 1—JIG B

to provide the power. So far the operation is about as usual. In jig B, however, we have originality. The casting stripped from jig A is located similarly in the bore jig B, the facets of which carry hard steel bushings for the remainder of the holes in the casting yet to be drilled. In the photograph those for the base attachment are visible at AAAA, while other facets of the jig carry bushes for grinding the drills for the spark plug's water connections, etc.

But the originality of the jig lies in the mounting of it in a heavy frame and pivoting it on trunnions so that it may be revolved from facet to facet with the utmost ease. The trunnion bearing can be seen at B and in the face of the jig casting may be noted bushed holes CCC. There are four such, accurately spaced 90 degrees apart. Spring-controlled stop pin D is mounted in the base casting and is actuated in withdrawal by catch E. The action of the operator over and above changing drills from size to size consists in kicking free and, according to the immediate balance of the jig, permitting it to revolve through a right angle, drill the holes, cause revolution of another quadrant, drill, and repeat for the remaining faces. The saving in time and labor is so obvious that enlargement is unnecessary.

Now turn to Figs. 2, 3 and 4. Fig. 2 is a reproduction of a special cylinder machine built for handling cylinders in multiple blocks. It is double-headed and carries a heavy saddle capable of revolution through 180, to which the cylinder blocks are strapped. In the photograph four sets of cylinders for the Thomas taxicab engine are in place. The boring head has double spindles, while the opposite one carries a large inserted blade milling cutter, which traverses the bases of the cylinders adjacent to it. The milling action being more rapid than the quadruple boring, it is accomplished subsequent to the

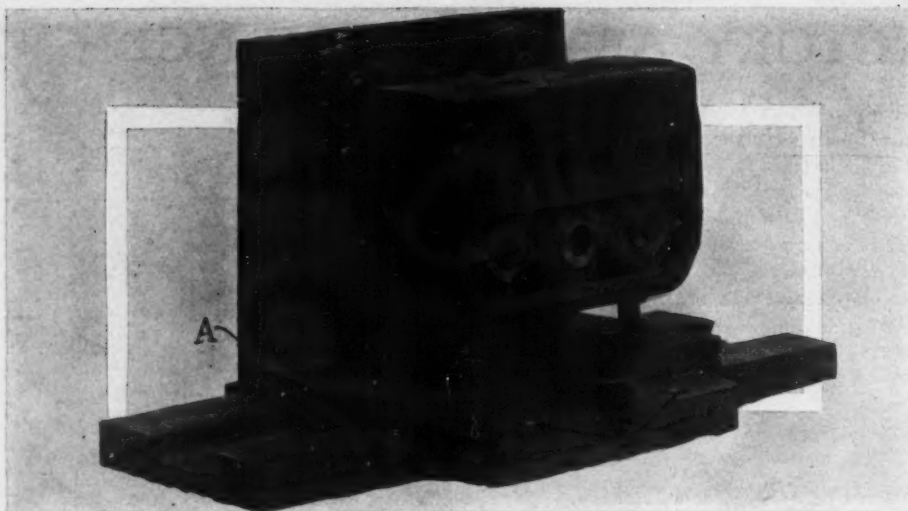


FIG. 3

boring; the cylinders finished are stripped from the saddle and others strapped in place ready for boring, so that a constant reloading is accomplished. This machine handles the cylinders for the taxicab and the new six-cylinder model in surprisingly short order.

So much for the boring. Fig. 3 shows the cylinder block in place on the jig for grinding the bores. This consists of a heavy base with a traversing way for attachment to the bed of a Heald grinder. A heavy angle plate A is arranged for carrying the cylinder block B, registering it on dowels in the base holes. The tail C of the angle plate carries a ground stop pin D that corresponds to bushed holes EE, representing cylinder centers. Grinding of one base being finished, the plate is transversely moved the distance between these holes and the grinding started in another

of the bores composing the block. The simplicity of the tool is most praiseworthy and the limits within which work turned out from it are extraordinarily small. Fig. 4 shows a Heald grinder at work with a similar fixture in place for a quadruple cylinder block A. The fixture design differs only in that the stop pin B is located in an extension from the face of the plate opposed to the grinding head instead of in the tail as in the jig for the triple block.

In Fig. 5 is a photograph of the fixture which handles the triple block after the boring, and for the sake of clearness the letters correspond for the work and the bushes in the jig. The work is located on plug PP, which, being accurately spaced, act as a check on previous operations. To load the jig, plate T, held in position normally by swing bolts S, is removed, the

work dropped in, the plate replaced and the work held by screw bushes RR, which perform the double function of cramping the work to the base of the jig and grinding the bar for the outside cylinder head plug holes. Above this plate are located bars BB, which carry bushings for locating the valve bores, seatings and guides. Bar B, shown in place, is for roughing, and bar B is utilized for finishing, being quickly substituted by slacking nuts NN, withdrawing slotted washers WW and lifting the bar, replacing its mate by reverse operations. Lower valve guides VVVVVV are looked after by the bushes VVVVVV, the jig being upset to reach them on the drilling machine. The bushes in bars B and B provide for the bores for the valve caps, the valve seats and the stem guides, the lower ends of which can be seen at LLL. Working through this fixture finishes these cylinders with the exception of the pipe flange attachment stud holes.

PATENT LAW IN MEXICO

Under the patent law of Mexico any person who desires to obtain a patent must present to the patent office in the city of Mexico a petition accompanied by the following documents in duplicate: A specification, a claim, a drawing or drawings if the case requires them in the opinion of the inventor. The patent office will make a purely administrative examination of the documents presented in order to ascertain whether they are complete and whether they satisfy the requirements of form laid down by the respective rules of practice. This examination will on no account turn upon the novelty or utility of the object sought to be patented, nor upon the sufficiency, clearness and ex-

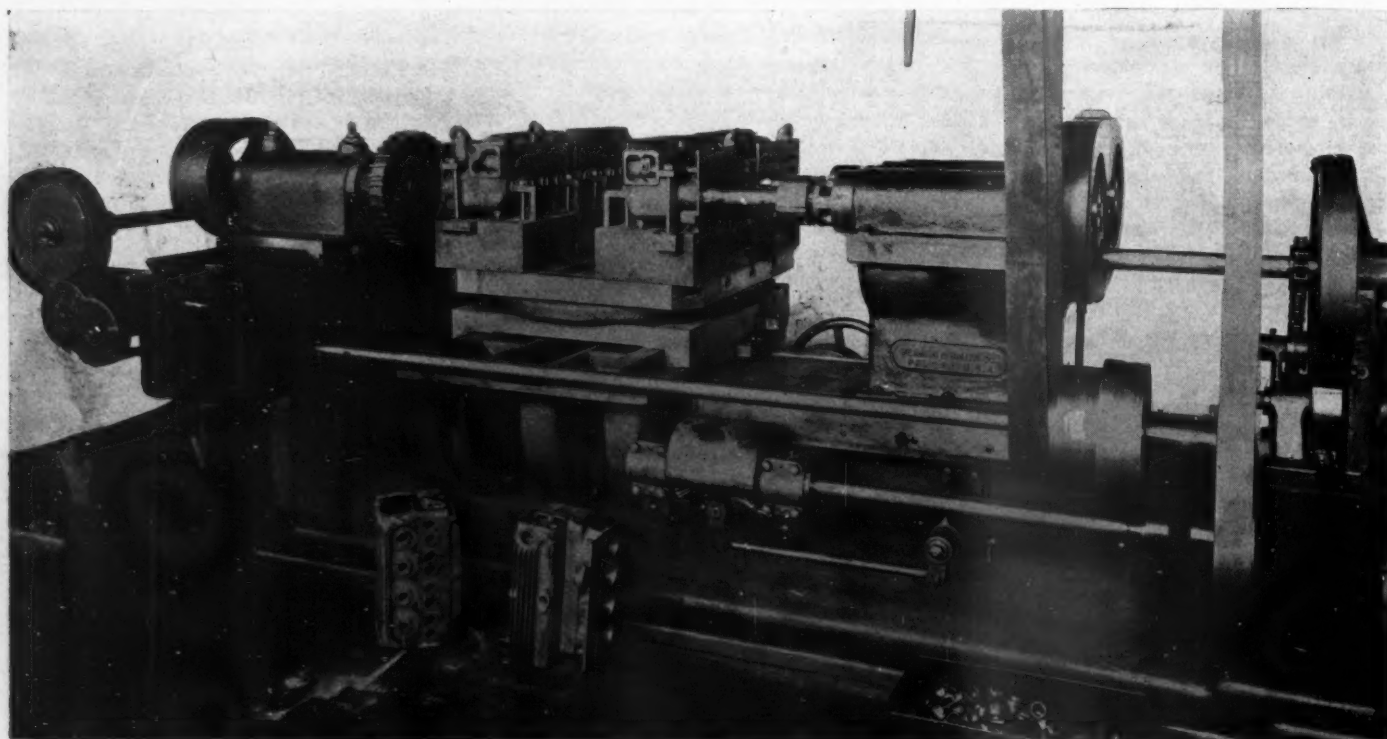


FIG. 2



FIG. 4

actness of the documents. The legal date of a patent is the date of the legal presentation, at the patent office, of the petition and documents which constitute it, and from that date it is supposed to have been granted and produces its legal effects. The legal date of a patent, solicited in Mexico and already applied for by the same person in one or more foreign states, will be that appertaining to the foreign patent first applied for, provided that it be within 12 months counted from the date of the first patent application abroad, in the case of a patent of invention. The further provision is made that the foreign state in which the patent was first applied for must grant the same right to Mexican citizens.

An invention is not to be considered as new when either in Mexico or abroad and prior to the patent application, it has already been carried out for a commercial or industrial purpose or has received, by means of a printed publication, sufficient publicity to be put in practice, for in such case the invention is considered to have become public property.

Patents are granted for a period of 20 years, counted from their legal date. This period is divided into two—the first of 1 year and the second of 19 years. The tax for the first period of 1 year is \$5, while the tax for the second period, or remaining 19 years, is \$35. The life of the patent may be extended for 5 years longer, within the discretion of the president of Mexico, subject to the payment of additional dues which the same president may see fit to fix. The rules of practice will determine the fiscal dues payable for copies, issuance of certificates, replacement of title deeds, etc.

Inventors desiring to obtain an extension of the life of a patent must address a petition to the patent office within the penultimate half-yearly period of the ordinary term of 20 years. The fact must be proved that the patent has been in uninterrupted industrial exploitation in Mexico for at least the last 2 years immediately preceding date of application.

The exploitation of a patent in Mexico is not obligatory; but if after the expiration of 3 years counted from its legal date, it is not exploited industrially in Mexico, or if after the expiration of those 3 years its exploitation has been suspended for more than 3 consecutive months, the patent office may grant to third parties a license to effect said exploitation.

Patents will be issued in the name of the president of the republic by the patent office and will be signed by the min-

ister of formeto. They will set forth the patent number, the name of the person or persons to whom they are granted, their duration, the object for which they are granted, their legal date and the date of their issuance. The patent, with one copy of the specifications, claim, drawings, when there are any, will constitute the title deed accrediting the rights of the patentee. The force of the patent applies only to the contents of the claim, the specifications and drawings only serving to explain the contents of said claim.

The above article is one of a series which Motor Age has had compiled, previous articles having dealt with the patent laws of the United States, Great Britain, Germany and Brazil. It is especially interesting to the motor industry, as inventors, putting out something new, naturally wish to protect their ideas in as many countries as possible.

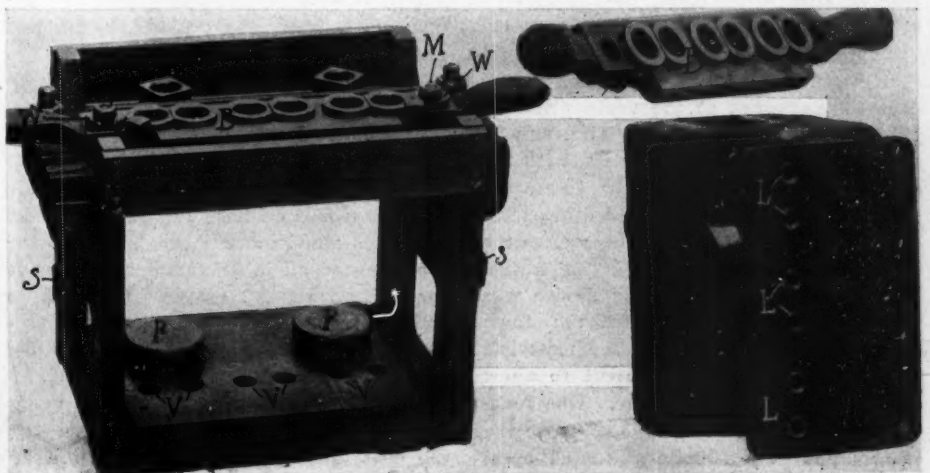
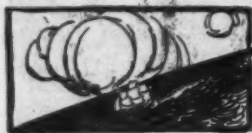
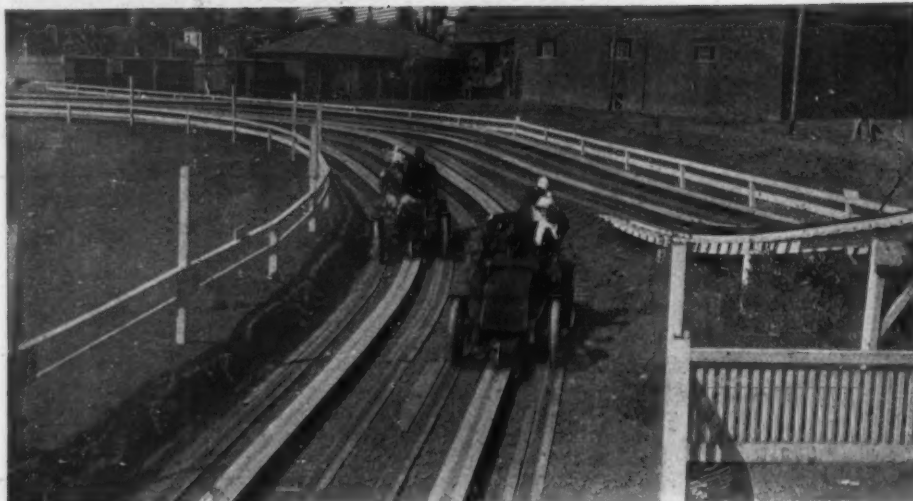


FIG. 5



From the Four Winds

N S E W



DEVICE INTENDED TO MAKE MOTOR CAR RACING SAFE

Close Call—Rather a grim reminder was the experience of three motorists at the Mills crossing in the town of Canton, Conn. The party was traveling along leisurely in a motor car and approached the grade crossing, but so did the passenger express. The driver brought the machine to a quick stop at the very edge of the tracks and as the train rushed by the headlights of the motor car were stripped completely off.

One-Handed Driver—That one does not necessarily require two hands to operate a motor car is illustrated by a driver of a single-cylinder Cadillac car at Hartford, Conn. The owner of this machine some time ago lost his right arm at the shoulder and, in fact, is shy a finger or two on his left hand. He recently acquired the car and operates it very successfully. When he desires to change from low to high, he braces his knee against the steering wheel and reaches over with the remaining left arm and works the lever. To drop from high to neutral his foot serves the purpose most satisfactorily.

Clayton's Scheme—Clayton, N. J., recently spent not a little money in laying flagstone crossings at the various streets. They are innocent-looking affairs, and at slow speed the 2-inch-high stones, with the easy gradients leading up to them, are quite harmless; but at any speed in excess of 20 miles an hour the crossings make the Glencoe bump-the-bumps look like a trio of dimes. This anti-speeding device was unintentional on the part of the town fathers; but since it keeps the motorists within bounds they are content to allow things to remain as they are. One road-burning stranger who hit the first one the other night at a 40-mile gait, and burst a tire when he landed, admitted that the scheme had motor cops beaten to a frazzle.

"A fine," he said, "amounts to only \$12.50. These tires cost me \$80 apiece."

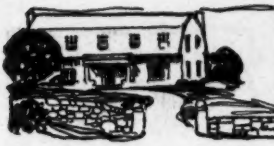
Long Trip in Grout—Gilbert H. Denton, recently traveled 272 miles in a Grout in 1 day, starting from Denver and making a circuit through the surrounding country, which is semi-mountainous and abounds in steep hills and sharp curves. The actual running time was 13 hours and the car, carrying four passengers, averaged 17 miles to the gallon. One quart of water was used. The Grout had run 20,000 miles prior to this trip.

Studies Road Conditions—Clarence A. Kenyon, an Indianapolis civil engineer, has returned home after an extensive motor car trip through Europe, where he paid special attention to the effect of motor car traffic on public highways. After a careful study of the situation Mr. Kenyon states that gravel and macadam are no longer practical for road construction where there is heavy motor car traffic and his observations are particularly interesting in view of the fact that just now Indiana is spending about \$8,000,000 for just such roads. "In Europe the destructive effect of the motor car on road foundations is universally admitted," he said. "Heavier foundations must be provided. The rubber tires suck the fine material out of the road and throw it into the air in great clouds creating the dust nuisance. Creosoted wood block seems to be taking the place of all other forms of pavement for heavy trafficked streets. For medium and light trafficked streets carefully prepared mixtures of pitch and broken stone are much in favor. Spraying specially prepared tar on macadam streets is being experimented with as a means of keeping the dust down and as a preservative by keeping the water out of the road. Oiling roads in Europe is not regarded as a suc-

cess." Gravel and macadam road building in Indiana is now at the height of its popularity. In Madison county alone the commissioners are ready to let bids for twenty-one new roads to cost \$250,000.

Makes Racing Safe—The motor car race course, the invention of R. B. Fageol, F. R. Fageol and E. E. Townsend, of Oakland, Cal., has been installed at Idora park, in that city, and steps are being taken to introduce the novelty at similar amusement places throughout the country. The novelty consists in the fact that two cars are started off at the same time on a two-lap track, and while no great distance separates the two at any time, just which will finish first always is in doubt. This is due to the fact that the cars are governed by automatic rheostats which vary the speed from 25 to 30 miles an hour. Standard motor cars are used, the power being electric. The track is wooden. In the middle is a raised plane upon which runs a small wheel affixed to the front of the car. This is a safety device to maintain the position of the car on the track. A wheel would have to jump the raised plane to cause an accident. While the operator on the bridge cannot foretell which will win, he can bring the cars to an immediate stop at any point on the track; this would only be done in case of trouble, and which is an additional contribution to safety.

Actor Makes Long Trip—William T. Hodge, who represents Daniel Voorhees in the play, "The Man From Home," arrived in New York at midnight last Monday, after having been on the road for 4 days in his Haynes 30, which he drove from the factory at Kokomo. The actor, together with R. M. Ash of the Chicago Journal, and David Cook of the Haynes Automobile Co., left the city hall, Kokomo, at half past 3 in the afternoon. Portland, Ind., 70 miles away, was made before sun down and the next day at Fostoria, O., 156 miles, was made. The third day of the trip brought "The Man From Home" into Ashtabula, O., 161 miles, and on the fourth day he arrived in Rochester, N. Y., his boyhood home, after going 207 miles in the Haynes. The excessive rain of the next day kept the tourists indoors but the following day, with the rain still pouring down, a start was made over roads that were muddy and cut up, with the result that but 87 miles were traveled and the party put up for the night at Syracuse. Leaving Syracuse the party found the roads still a mass of mud and gumbo and stopped for the night at St. Johnsville, after making but 95 miles. The next and final day of the trip brought the crowd into New York with a total mileage of the day of 244 miles.



News from the Motor Clubs



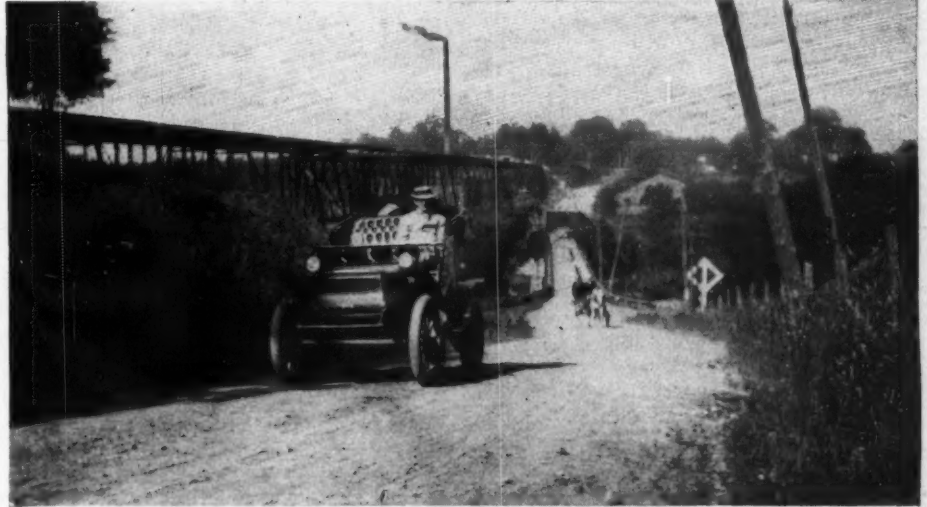
Electric on a Tour—Rather a novelty was the tour recently made by a Detroit electric, which traveled from Detroit to New York city, the battery being charged at the night stops.

Want a Dust Commission—Milwaukee club women have started a movement for a dust commission. It is planned to use part of the motor car license tax income and place a small tax on every horse in the city to pay for treatment of every street with oil preparations that have been found so very successful by the Milwaukee board of public works in its experimental work on the roads.

New Club in Kansas—The Dodge City Motor Club, of Dodge City, Kan., has been organized with a membership of thirty. The following are the officers: President, Frank G. Barkley; vice-president, C. D. Beeth; secretary, Clifford Markley; treasurer, W. V. Brown. Interest in motoring is quite lively and the club membership will be materially increased as the summer approaches. Western and central Kansas roads are excellent and runs are contemplated, including a trip to Colorado.

Wildwood's Meet—The midsummer meet of the Motor Club of Wildwood, scheduled for Saturday, will have eleven events on the program, all at 1 mile except the kilometer free-for-all time trials. The gasoline classes will include under \$1,250, \$1,251-to-\$2,000, \$2,001-to-\$3,000, \$3,001-to-\$4,000, and \$4,001-or-over stock cars, the latter for four-cylinder machines. There will be, in addition, a free-for-all for six-cylinder cars, an event for stock gasoline touring cars carrying four passengers besides the driver, a steam stock car race, a free-for-all and the time trials.

Ride for Old Folk—"Old folks' day," an annual event in which the members of the Grand Rapids Automobile Club, of Grand Rapids, Mich., donate their machines for the use of the aged and infirm, was held July 22 and about 125 old folks of the Furniture City enjoyed a ride about that place. Thirty cars were used. No specific routes were laid down, the places to be visited being selected by the owners of the machines. Many private homes were also visited, it having been announced through the newspapers previous to the event that no aged person who wished to go riding would be left out if he or she would make his or her desire known. Consequently a number of private homes gave their share of crippled and aged and the run was made through the city's parks and out into the surrounding country. A. J. Brown, Dr. D. Emmett Welsh and J. R. Jackson were instrumental in arranging the affair and



DETROIT ELECTRIC TOURING FROM DETROIT TO NEW YORK CITY

Mr. Brown was in command of the arrangements. The trip is an annual event and is enjoyed by increasing numbers of aged each year.

Trouble at Seeleyville—The whole population of Brazil, Ind., including the fifty motor car owners of that city, are engaged in a fight against the village of Seeleyville, which is evidently in need of money or wants to emulate the example of New Jersey constables. Although the law allows a speed of 15 miles an hour, except in closely built portions of cities, Seeleyville authorities say that 8 miles an hour is fast enough. They have posted the roads leading into the town accordingly and are fining all drivers who exceed that limit. Now Brazil drivers, backed by other residents, propose to retaliate. They are planning to stop Sunday baseball at Seeleyville, stop illegal sales of liquor and incidentally see what can be done to the authorities for a misconstruction of the state law regarding motor speed.

Spending Money on Roads—The Maryland good roads commission has taken the first step toward the construction of the system of state roads which it is proposed to build with the \$5,000,000 authorized for the purpose by the legislature, by deciding on the routes in St. Mary's and Calvert counties, in southern Maryland. In the first named county the commissioners decided to start at Mechanicsville and run through Morganza, Loveville, Leonardtown, Park Hall, St. Mary's City, St. Inigo to Point Lookout. This point starts on the La Plata road, just west of Charlotte Hall. In Calvert county, the improved highway will begin at Owings Station, running through Sunderland, Prince Frederick, Port Republic, St. Leonard's, to Solomon's Island. The commission has authorized Chief Engineer Crosby

to start the surveys for these two roads immediately. The work of construction will begin in a few weeks.

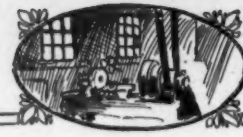
New Club Started—The Automobile Club of Chester County, Pa., has been organized, with the following officers: H. A. Beale, of Parkesburg, president; E. T. Moore, Coatesville, first vice president; Guy Miller, Downingtown, second vice president; F. W. Speakman, Coatesville, secretary, and S. H. Scott, Coatesville, treasurer. A program including an endurance run, a hill-climb and a race meet has already been outlined.

Stone Bridge a Wonder—The formal opening of the new Connecticut river stone bridge at Hartford, Conn., which was recently completed, will take place in October and it is proposed in connection with the event to have a motor car parade. There is much agitation towards holding the Automobile Club of Hartford hill-climb at this time but as yet nothing definite has been decided upon. The new structure cost about \$2,000,000 and is one of the finest pieces of stone masonry in the world.

Conciliating the Farmers—The Oshkosh Automobile Club is taking steps to conciliate the farmers and secure attention to highways. Complaint is made that Winnebago county, Wis., farmers appear to be going out of their way to make it unpleasant for motorists, sacrificing comfort to make things uncomfortable for the motor car owners. Hearing of the complaints, James T. Drought, secretary of the Wisconsin State A. A., rose up in righteous wrath. "It is so different in northern Wisconsin," he said. "On the M. A. C.'s annual tour 2 weeks ago we learned a lesson from the pioneer northern Wisconsin farmers. They take pride in their highways and help us all they can."



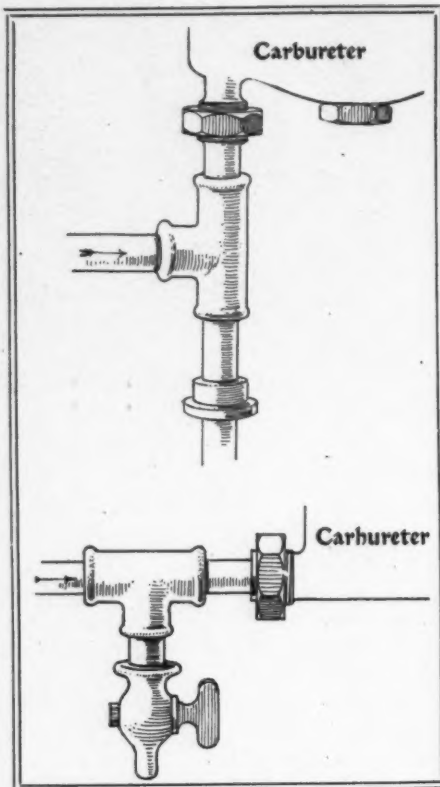
Motor Car Shop Kinks



BINDING SHIFT GEARS

Occasionally a car will be found in which unclutching fails to completely relieve the strain on the sliding gears, so that, although the clutch is disengaged, it is difficult to shift the gears. This is always due primarily to the forward journal of the squared shaft binding in the bushing in the first spur pinion which received the power from the clutch. The effect of this binding, however it happens, is to make the squared shaft tend turn with the first spur pinion, and if any gear but the direct drive is in engagement there will be a drag imposed on the gears in mesh, which will make them hard to shift. The cause of the binding between the square shaft and the pinion is another matter. If there is a flexible coupling between the clutch and the first spur pinion, the cause of trouble may be looked for in the gear box itself, in the shape of a sprung sliding gearshaft or badly aligned bearing carrying the first pinion shaft. Sometimes, however, there is no flexible coupling between the clutch and the gear box, and the clutch shaft A is internally squared to make a slip joint on a squared forward extension B of the first spur pinion shaft. See sketch. In this case there is no more chance for disalignment than is afforded by the side play in the square slip coupling just mentioned, and if, for any reason, that play is insufficient, the clutch shaft will forcibly slant the first pinion C out of line with the other shafts in the gear box, thereby cramping it on the shaft D carrying the sliding gears. Disalignment of this sort is usually due to sagging of the frame, and is to be corrected by suitably shimming the engine and the gearbox, or the gearbox alone, as circumstances require. If the engine rests on the side members of the frame by four narrow feet it may be difficult to hold shims in place under these feet. In this case both the front and rear ends of the gearbox may be dropped to bring the gearbox in line with the engine, and the rear end of the gearbox will have to be lowered more than the front end. If the gearbox is bolted to the under side of the cross members of the frame, shims are easily inserted, but if it rests on the latter it may be necessary to go to the trouble of soldering brass shims to the frame under the rear feet of the engine, thus permitting the front end of the gearbox to be elevated instead of depressing both ends.

In case it is found that the slide gearshaft and first spur pinion bind only in one position of the clutch, but are free when the clutch is turned 180 degrees, it follows that the clutch and pinion shafts are mutually out of line, probably owing to the internal squared portion of the clutch being out of line with the front

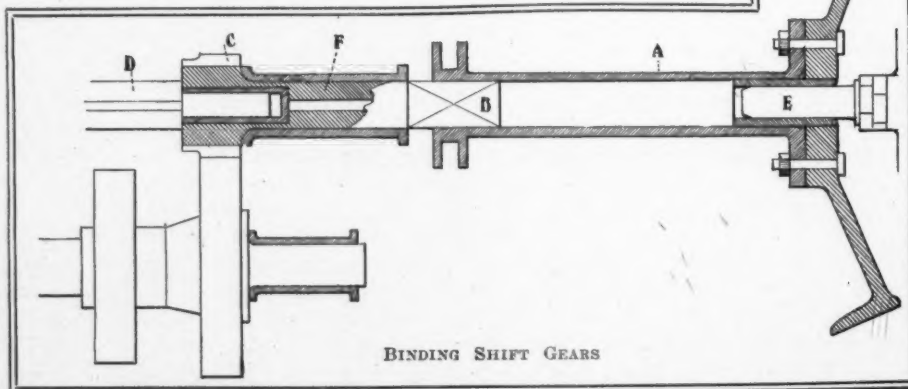


SIMPLE GASOLINE SEPARATOR

bearing running on the engine shaft E, and the squared extension B of the pinion being out of line with the journal portion F. If these respective squared portions are separated and one is given a half turn it is likely that the errors will neutralize each other.

SIMPLE GASOLINE SEPARATOR

An effective and very simple device for separating solid particles and water from the gasoline as it enters the carburetor, is the tee connection shown in the sketches. The gasoline pipe is probably $\frac{1}{2}$ -inch pipe size and the union to the carburetor the same size. Both the pipe and the union can be threaded into the tee and a short $\frac{1}{4}$ -inch pipe 1 or 2 inches long is threaded into the bottom connection of the tee and is closed by a removable cap or pet cock.



BINDING SHIFT GEARS

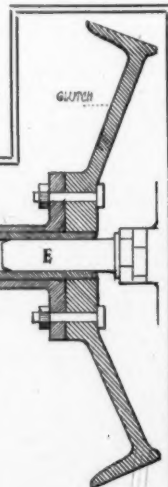
The flow of gasoline through the tee will be slow enough to permit water and solid particles to settle in the bottom pipe. Evidently the tee can be connected with ease, and without change in the length of the gasoline pipe, whether the carburetor connection is in the side or bottom. The threaded connections should be sweated together so vibration will not start leaks.

MARK THE SEGMENT

When one has a carburetor with a sliding or piston throttle it is very convenient to know exactly the position of the throttle lever at which the engine will just run itself. A simple way to accomplish this is to file down the teeth of the notches from that point to the point where the throttle is fully closed. Then one can always find the just-open position by the feel of the lever, even in the dark, for all he has to do is to close the throttle beyond the notched portion of the segment, and instantly turn the lever back until the first tooth is met. In starting the engine this enables him to avoid all unnecessary racing, and in coasting he can unclutch, set the throttle to the just-open position, and descend the hill noiselessly, yet with the certainty that the engine will pick up instantly when the throttle is open.

MAKING PAPER SHIMS HOLD

Paper is a poor material for shims of any sort where pressures are high and intermittent, as in the bearings of the engine or gearcase, under the crankcase feet, or between the gearcase and the frame. The principal excuse for using them is that they are so handy. On the other hand, they are liable to break and disintegrate from the pressure and vibration, and it is not always easy to squeeze them up tight enough in the first place to insure their staying where they are put. If they must be used they should be thoroughly saturated with shellac and squeezed in place before the shellac dries. The shellac will act as a finger, and will also help the shims to cling.

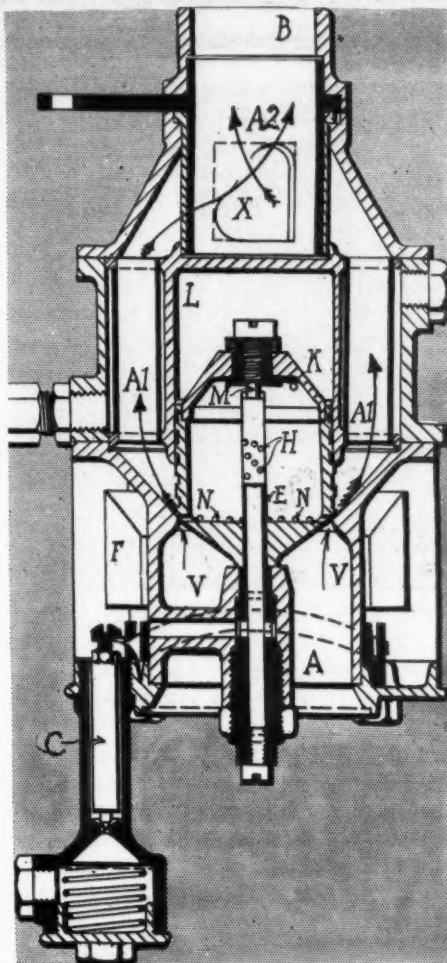


CARBURETER JET FOR EACH 2 HORSEPOWER

MOTOR AGE is indebted to a recent issue of its contemporary, the Autocar of London for some interesting information relative to the Scott-Robinson carbureter, an English invention which is worked out on rather ingenious lines with the hope of securing a uniform mixture for the varying motor loads. In designing this carbureter M. Scott-Robinson, the inventor, has kept in mind the possible power to be developed by the motor rather than the crankshaft speed; his reasoning being that at times the motor pulls 30 horsepower at 1,000 revolutions per minute, 10 horsepower at 1,00 revolutions per minute, 15 horsepower at 750 revolutions per minute and 15 horsepower at 500 revolutions per minute, from which he deduces that the mixture necessary for the running of this engine must vary according to the horsepower needed and consequently be independent of the crankshaft speed. It is customary in automatic carbureters to have the mixture governed almost solely by the crankshaft speed, irrespective of the power the motor is generating at the time. In order to achieve mixture in proportion to horsepower the Scott-Robinson carbureter is so designed that it has one jet for every 2 horsepower, so that with the engine working with a 30 horsepower load fifteen gasoline jets are in operation.

The method of securing the different number of jets appears in the accompanying illustration, in which A is the normal air opening, B the exit to the induction pipe, and C the needle valve governing the flow of gasoline to the float chamber carrying the float F. Within the carbureter proper is a standpipe E, in the top of which is a series of thirty orifices H through which gasoline can escape. These orifices are in the center of an air regulating float K which can move piston-like in the casing L. This air-regulating float carries a piston M which fits in top of the standpipe E, its duty being to uncover and cover the orifices H according as the air regulating float K rises or falls. In the bottom of the air regulating float K is a circle of circumferential openings N.

In following the course of the air and gasoline, as well as studying the operation of this carbureter, bear in mind that the air entering is at the first completely confined in the chamber V until the air-regulating float K is raised, permitting the air to pass around this air-regulating float K and follow the direction indicated by arrows A1 and A2. This air, in its course, passes the openings N in the air-regulator valve K and the suction of the motor is such as to tend to draw the air out of the interior of K. The gasoline can at such times flow out of the orifices H. This gasoline escapes through the openings N, mixes with the



SCOTT-ROBINSON CARBURETER

air and passes through to the motor. In explaining the operation of his invention Scott-Robinson states that with the throttle

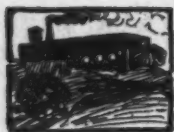


Hoosiers Like Motor Service

There are now twenty-eight firms in Indianapolis using motor trucks or delivery wagons wholly or partially in place of horses. Of these nine companies have established such service since the first of the year, while two other concerns have added to the number of commercial vehicles in use. The trucks and delivery wagons now in use represent a wide variety of tradesmen. Until this year such service was confined largely to department stores and express companies, but wholesale cigar companies, a piano store, three retail and one wholesale grocery houses, three wholesale paper companies, a plumber and a manufacturer of specialty food products have established motor service with considerable success. In addition to the trucks and delivery vehicles, the Frank Bird Transfer Co. has operated six electric cabs for several years and there are three companies engaged in the sight-seeing business. Probably salesmen for a dozen business houses are now using motor cars.

X at its half-load position the amount of mixture required would be 1,950 cubic feet per hour, at which consumption the air regulating float K rises to its half-lift position, bringing half of the orifices H into work. Because the weight of the air regulating float K is constant, the velocity of the air past the holes N is constant, and the vacuum within the air regulating float K is also constant, thereby insuring a constant pull on the gasoline in the standpipe E which it is claimed eliminates the varying momentum on the escaping gasoline, which is claimed to be so common in carbureters where the pull on it is in proportion to the crankshaft speed. Because the air mixture must always flow past the air-regulating float K, according to the arrows A1 at a constant velocity and the head of the liquid in the standpipe E remains constant, the inventor claims that the delivery of the fuel must be varied in volume only, which he accomplishes in the following manner: Supposing the weight of the air regulating float K be such that the mixture velocity in the direction of the arrows A1 is 100 feet per second. At a half-load position the area past the base of the air regulating valves K would be $\frac{1}{2}$ square inch, which would be sufficient for 1,950 cubic feet of mixture per hour, or enough to develop 15 horsepower, or half load. Assuming the use of 2 per cent mixture of gasoline, the amount of gasoline vapor contained in the 1,950 cubic feet of mixture would make it necessary for the jets to deliver gasoline at the rate of 1.35 gallons per hour.

Should the throttle be moved to its full load position, or 30 horsepower, the air regulating float K immediately rises to its maximum position bringing all of the orifices or jets H into operation. At this position 3,900 cubic feet of mixture per hour is needed, calling for a passage area past the base of the air regulating float K of 1.56 square inches, and a full consumption of 2.7 gallons per hour. Considering the use of a full-powered car with few opportunities of using the maximum power and further assuming that the lower orifices H emit up to half the maximum power, they could be adjusted so as to deliver a rather weak mixture suitable for around town work. Also, all jets could be proportioned to give the maximum power at higher loads, which would be suitable for touring purposes. As to the possibilities of clean exhaust under different conditions of this carbureter an analysis showed that 1.5 per cent of CO, the analysis being made from a dozen samples. Further evidence as to the operation of this carbureter exists in the fact that an 18-22-horsepower car, weighing 2,576 pounds, on a long trip averaged 28 miles to the gallon. Similar performances have been made.



Among the Makers and Dealers



IMMENSE GASOLINE TANK INSTALLED AT THE MAXWELL'S TARRYTOWN PLANT

Will Use Truffault-Hartford—For the fifth consecutive year the George N. Pierce Co. has decided to equip its entire output with Truffault-Hartford shock absorbers.

New Scheme in Indianapolis—A step new to trade circles has been taken by the Fisher Automobile Co., of Indianapolis in selling the Stoddard-Dayton, for which that company has the Indiana agency. The company has posted a forfeit of \$100 for any Stoddard-Dayton sold by it that will not run 60 miles an hour, a speedometer to be the judge.

Hood General Manager—The recently organized Zell Motor Car Co., of Baltimore, will have its Washington headquarters with the Motor Car Co., of which W. C. Hood is general manager. The latter is also secretary and treasurer of the Zell Motor Car Co., of Baltimore, the president being A. Stanley Zell. The Zell Motor Car Co., of Baltimore, will control the sale of the Chalmers-Detroit in the District of Columbia, as well as in the surrounding states, it is announced.

Want Overland to Move—Several Indiana cities are offering tempting inducements to the Overland Automobile Co. to remove its plant from Indianapolis. While officers of the company decline to make any statement at this time, it is believed that they are considering the offers made. No action has been taken, however, and it is generally believed that the plant will remain in Indianapolis. Last year the company was reorganized with D. M. Parry, of the Parry Mfg. Co., at the head. Later it was again reorganized and since that time has been having an excellent business. A temporary plant was erected last year and this has been supplemented by tents, which have not proven altogether satisfactory. It is almost a certainty that the company will have to have a larger

plant by next season. Anderson, Muncie and Newcastle are the cities making the most persistent offers for the plant.

Will Care for All Cars—The repair department of the Electric Vehicle Co. at Hartford, Conn., will henceforth be operated as a garage in which all makes of cars will be accommodated and repaired.

Diamond Moves a Branch—The Diamond Tire Co. has secured new quarters in Boston that will be very much superior to the old headquarters in every way. The new office will be in the Pope building and it gives 15,000 feet of floor space, which will be an ample area for a big supply of tires. The change from the old place will take place August 1.

Show in a Tent—Rather novel is the scheme of the Hartford Automobile Dealers' Association. That is to say the organization proposes to hold a motor car exhibition under an immense tent at Charter Oak park in connection with the state fair September 7 to 12. The state fair is a typical New England institution and everyone from far and near turns out to see the fun. It is therefore safe to assume that all would be interested in motor cars, and the plans of the organization look towards a pretentious display. The motor car exhibition tent will be located close to the entrance to the park and will afford something like 15,000 square feet of floor space. The "floor" will be covered with tan bark. The main aisle will, of course, be in the center and there will be ample provision for a full display of cars and accessories. Many of the local dealers will by the time of the show have secured 1909 models so in this respect the exhibition will not be lacking. It is estimated that about 50,000 people will visit the state fair and as they will be out for fun they will doubtless take in the motor show.

The agricultural aggregation will have an opportunity to see a good show right on its own grounds.

Opens on Quaker Row—The Automobile Supply Co., a firm composed of W. C. Chambers and F. C. Winkel, opened up a supply station last week at 1320 Vine street, Philadelphia, a short distance from the row.

Bergdoll Gets Chalmers-Detroit—The Bergdoll Motor Car Co., of Philadelphia, has just acquired the local agency for the Chalmers-Detroit car. The Bergdoll concern already handles the Benz, Welch, Oakland, Berliet, Imperial and Rauch & Lang electrics, besides operating the Thomas taxicabs from its big garage at 321-325 North Broad street.

German Trade—The official records show that the imports of motor cars from Germany dropped from sixty-one, valued at \$252,062, during the 11 months of the fiscal year 1907, to thirty, valued at \$119,285, during the 11 months ended June, 1908. On the other hand, the exports of motor cars and parts from the United States to Germany increased from \$119,136 to \$126,279 during these same periods. The balance of trade continues to be with this country.

Taxicab Service in Baltimore—A taxicab service will be introduced in Baltimore the first of next month. Although only fifteen cabs will be put into service at the start this number will be gradually increased until, it is expected, fifty or more of these cars will be seen in operation within 6 months. E. H. Clark & Co., representing the Baltimore Taxicab Co., will conduct the business. The taxicabs to be used will be driven by 22 or 24-horsepower gasoline motors and will have a capacity of four persons. For the first mile traveled in the cab 50 cents will be charged. Each additional mile will cost 20 cents, and 10 cents will be charged for every 10 minutes the cab is kept waiting while in hire.

New Concern in Hartford—There has just been formed in Bristol, a suburb of Hartford, Conn., a new manufacturing concern which will be devoted to the production of motor car parts, with the ultimate intention of embarking in the taxicab line. Albert F. Rockwell, president of the New Departure Co., DeWitt Page, secretary of the same company, and F. E. Moskovics, of Kingston, N. Y., have completed the organization, which is known as the Bristol Engineering Co. Mr. Rockwell has been elected president, Mr. Page vice president and Mr. Moskovics secretary and treasurer. President Rockwell has only recently returned from Europe, where he has been looking over the taxicab field. Definite plans have not been developed and

beyond the fact that the factory is to be located in Bristol nothing is said by the officers of the company. The amount of capitalization has not been decided upon.

Winton's Chauffeur Contest—It is likely that the 1909 \$2,500 contest for Winton six chauffeurs will be open to employed drivers of the 1908 six as well as of the 1909 six. Should this be decided upon, mileage reports will not be accepted prior to October or November, in order that cars now in service may not have too great an advantage in time over new cars.

Blomstrom in New York—The company formed to handle the Blomstrom gyroscope car has been incorporated under the title of the Gyroscope Automobile Co., and headquarters have been selected at 231 West Fifty-fourth street, where, after extensive alterations, show and salesrooms will be established. The incorporators are C. P. Fleming, Douglas Hamilton and A. L. Kull, the last named being general manager. The new headquarters are situated in a five-story building where there will be ample storage room and a large machine

shop. Here the selling of the entire Blomstrom output will be carried forward.

Warehouse Needed—The E. A. Tygert Co., 614 Chestnut street, Philadelphia, manufacturer of Motorlube oils, has built up such a large trade in the Jersey shore resorts that it is seriously considering the erection of a warehouse to accommodate this particular branch of its business.

Big Gasoline Tank—The accompanying photograph shows the Maxwell-Briscoe Motor Co.'s new 10,000-gallon gasoline tank, being hauled from the railroad station to the factory by a 24-30-horsepower Maxwell. The hauling was accomplished with the aid of block and tackle, and proceeded at the rate of 4 miles an hour.

Woods in for Himself—Walter A. Woods, who has been the general manager and treasurer of the Cleveland Motor Car Co., has severed his connection with that concern, and will go into the manufacture of cars on his own account. He is to be at the head of a new company, which has recently been formed with a capital stock of \$300,000, and a six-story building is

now in course of construction in New York city, which will probably be ready for occupancy by September 1. The new building will contain a salesroom, garage, stock room and repair shop.

Chicago Changes—The agency for the E-M-F car has been taken by the Githens Brothers company, of Chicago, which has the Illinois territory north of Springfield. C. A. Coey & Co., formerly agents for the Thomas Flyer, have secured the De Luxe.

Michelin in Cleveland—The Michelin Tire Co., of Milltown, N. J., has opened a branch at 2001 Euclid avenue, Cleveland, O., under the management of R. B. Tracy, with D. K. Dickinson, formerly with the Hartford Rubber Works, as assistant manager of the branch.

Goes With Hatch—Eddie Richards, a well known driver of Buffalo, is the latest recruit of the Chalmers-Detroit. Richards has just given up his position with the E. R. Thomas Motor Co., of Buffalo, to accept the position of demonstrator for Mason B. Hatch, who has taken on the Chalmers-Detroit line for Buffalo.

MOTOR CAR TRADE CONDITIONS IN NORWAY AND CEYLON

Washington, D. C., July 27—The federal trade promotion bureau is advised that, owing to the physical character of the country, Norway is destined to be but a limited market for motor cars. Nevertheless, they have come into use in several parts of the country, both for commercial and pleasure purposes. There are about ninety cars registered in the country, the greater portion of them being in Christiania, which is the only city in Norway where registration of cars is compulsory. Most of the cars are for pleasure, but a few delivery cars are also in use. All of the cars have been imported; about twenty-five are of American origin, while the others are of French, English and German manufacture. There is a motor car factory in Norway, but its output so far has been limited to two small cars. The competition offered by domestic manufacture is therefore of no consequence. The Norwegian duty on motor cars is 12 per cent ad valorem. The kind of cars most likely to find a market in Norway will be thus ranging in price from \$900 to \$1,500, about 20 horsepower and well qualified to climb steep grades. Larger cars at higher prices will find a few buyers. American cars have been well received in the Norwegian market and their many good points have been duly appreciated, but it seems they range too high in price compared with European makes. Thus a British firm offers a 30 horsepower six-cylinder car for \$2,626, while an American car of 20 to 25 horsepower costs \$2,814. The terms of payment are always in favor of the European manufacturer, who generally gives long credit to solid purchasers, while American manufacturers invariably demand cash

on delivery, at least against shipping documents. The strict rules and regulations laid down by the authorities for driving cars on the Norwegian highways is one of the serious drawbacks to the development of the business in that country. Every district has its special rules in regard to such matters; thus a new permit has to be obtained for each one to be traversed. In some districts motor car driving has been entirely prohibited; in other places only certain roads within the district may be used, and then on certain days and at specified hours only. The explanation given is that the roads are too narrow for the safe passage of horse vehicles and motor cars at the same time. It should be remembered that some of the Norwegian public roads have a width of about 7½ feet only and that there are many sharp curves. New and more liberal rules, uniform for the whole country as far as practicable in regard to this matter, are now under preparation by a committee specially appointed for the purpose; but it will still take a year or more before any new enactment will come into force.

At present there are 200 motor cars in service in Ceylon, only one of them being an American car. It would appear that there is need for several hundred more machines there, but whether the need would be recognized by those expected to purchase is a question. The federal trade promotion

bureau is advised that the field which it is believed could be developed profitably by American motor car manufacturers lies in the tea and rubber estates, of which there are about 1,200 on the island. Each estate needs a car, but as yet very few of the proprietors have taken steps to meet the want. The machines required in Ceylon should be good hill-climbers, of moderate cost, and economical in operation. The vast majority of the plantations are situated in the mountains, and are reached by narrow, and almost spiral roads, with heavy grades and sharp turns. If the American motor car manufacturer entertains the idea that his car may be sold in Ceylon by catalog, let him dismiss that idea forthwith. Cars may be sold there only as the result of demonstration. The manufacturer, though he is thoroughly satisfied of the excellence of his car, cannot expect a contemplating purchaser, 10,000 miles or more removed from the sight of that car, to understand its capability as he does himself, with nothing but a printed catalog to guide him. The manufacturer who contemplates capturing the Ceylon market should begin by sending out a representative and a good demonstration car, authorizing his representative to assure a purchaser that a supply of parts will be kept at Colombo. This last consideration is essential in the case of a car the various parts of which are not standardized, as it is not to be assumed that a resident of Ceylon would knowingly place himself at the disadvantage of having to wait for a substitute part of his car, in case of damage by accident, to be shipped from the United States. By following these lines a good business opening is possible.





Brief Business Announcements



Boston, Mass.—The Motor Supply Co., of Lowell, has been incorporated with a capital stock of \$10,000.

Corliss, Wis.—Ernst Klinkert, the Racine brewer, who is building a \$20,000 hotel here, will build a \$5,000 garage adjoining.

New York.—J. W. DeLamater has been appointed manager of the Hotchkiss Import Co. to succeed A. M. Archer, who has resigned.

Highland, Cal.—A. A. True and E. A. Green have formed a new company to be known as the Highland Auto Co., and will erect a garage south of the bank.

Rock Island, Ill.—William Butterworth, of Moline, has let the contract for the erection of a two-story garage, to be built on the Butterworth property at Twelfth street and Seventh avenue.

Los Angeles, Cal.—The Taxicab Co. has placed its first machine in operation. For the present the company is making its headquarters at the garage of the Western Motor Car Co. E. C. Anthony, the manager of the latter concern, is interested in the new enterprise. The Thomas is the car used.

Berlin, Wis.—The Chapman Double Ball Bearing Co., of Boston, Mass., has secured the contract for supplying bearings to the Wright Co., of Berlin. The Chapman company a short time ago planned to establish a branch factory at Berlin, but found it advantageous to rearrange the Boston factory.

Los Angeles, Cal.—W. A. Cowan, who has the agency for the Rambler car in southern California, has bought, through the agency of Edwards & Wildey, a lot on the east side of Hope street, 150 feet north of Twelfth. Plans are being prepared by W. S. T. Norton for the erection of a garage 50 by 156 feet to cost \$6,000.

Muncie, Ind.—Harvey L. Hooke, manager of the Muncie Auto Parts Co., and who was recently appointed receiver for the concern, has applied to the court for permission to sell the plant. The receiver was ordered to close the factory as soon as the present orders were filled. It is thought the plant will be bought up and started again.

Omaha, Neb.—Work has been commenced on the new McKeon motor car shops, where the new McKeon gasoline motor cars will be built. W. R. McKeon has resigned as superintendent of motive power and machinery of the Union Pacific, and will manage the new business, which will be known as the McKeon Motor Car Shops, and which will be controlled by E. H. Harriman. The company will manufacture all the motor cars for the Union Pacific, but will be entirely separate from the railroad. Mr. McKeon is the president of the

motor car manufacturing company, which was recently incorporated under the laws of New Jersey.

Cleveland, O.—J. P. Egensperger, with offices in the Schofield building, has been appointed agent for the Northern.

Rome, N. Y.—The Long-Turney Mfg. Co., maker of radiators and supplies, is about to erect a two-story addition, 50 by 150 feet, to its factory.

Pittsburg, Pa.—According to information from Wheeling, W. Va., J. J. Griffin, of the Griffin Auto Tire Repair Works, has opened a branch office there. It is to be under the management of A. C. Gris. Mr. Griffin is the local agent for the Samson tire.

Topeka, Kan.—The Topeka Foundry and Machine Co. has established a motor car repair department in connection with its foundry business. It is to be under the management of John Broberg, formerly foreman of the assembly room of the Smith Automobile Co.

Seattle, Wash.—Seattle is the latest city to adopt the taxicab. A company has been organized to operate the machines, which have already been ordered, and five cabs are to be in use within 30 days. S. A. Burch is the president of the company, Frank Hanford vice-president, Charles Perry secretary, while C. M. Hatcher and



Hartford, Conn.—Eastern Transit Co., capital stock \$50,000, to manufacture, lease, sell, buy, equip, license and operate airships of all kinds, also stages, cars, boats, motor cars, taxicabs, taxivans, etc.; incorporators, J. L. Loomis, J. W. Knox and Mary E. Kellogg.

Warren, O.—Hitchcock Motor Co., capital stock \$20,000, to manufacture and repair motor cars.

Brooklyn, N. Y.—Interborough Garage, capital stock \$20,000, to operate a livery for motor cars, etc.

New York.—New York Auto Supply Co. of Hempstead, capital stock \$12,000, to deal in motor cars, bicycles, etc.

New York.—City Motor Service, capital stock \$50,000, to manufacture and deal in motor cars and operate the same.

Lynn, Mass.—Charles C. Phillips Co., Inc. capital stock \$5,000, to do a general building and contracting business, deal in all kinds of gas and electrical supplies, deal in motor cars and accessories. E. C. Phillips is the president of the company; C. C. Phillips, treasurer.

Richmond, Va.—Gordon Motor Co., capital stock \$5,000 to \$25,000 to do a motor car transfer business.

Richmond, Va.—Foster Motor Car Co., Inc., capital stock \$3,000 to \$10,000, to deal in motor cars.

New York.—Gyroscope Automobile Co., capital stock \$5,000, to manufacture and deal in motor cars, parts and accessories. Incorporators, A. L. Kull, Douglas Hamilton and C. P. Fleming.

New Jersey.—Chalmers-Detroit Motor Co. of Philadelphia of Camden, capital stock \$25,000, to manufacture motor cars, vehicles, etc. Incorporators, F. R. Hansell, W. E. Eiddell and J. A. McPeak.

C. A. Stewart are to be the managers. The capital stock of the concern is announced to be \$150,000.

New York.—In the future the Chalmers-Detroit car will be handled by Carl Page & Co. Quarters will be secured on Broadway by the Page people.

Janesville, Wis.—The Owen Thomas Motor Car Co. is negotiating with the Chicago and Northwestern Railway Co. for the lease of the abandoned railroad shops in Janesville for a factory.

Kenosha, Wis.—The effects of the Earl Motor Car Co. were sold on an execution on July 25. None of the former officials was present to bid. All are hopeful of effecting a reorganization, however.

Milwaukee, Wis.—The King Leather Tire Co. has filed articles of incorporation. The capital stock is \$20,000 and the incorporators are Anthony J. Deuser, N. E. Oliphant and Herbert J. Piper.

Berlin, Wis.—Deibler & Johnson, who are assembling cars here, making some of the parts on a small scale, are organizing a stock company to go into the manufacturing business on an extensive scale.

Orange, Cal.—J. A. Barger has been taking estimates on a garage to be built on South Glassell street, to replace the structure now occupied by Erwin Brothers. The new building will be ready for occupancy by October 1.

San Francisco, Cal.—George Thompson, who has been connected with the local branch of the Fisk Tire Co., has resigned from that concern, and in the future will act as assistant general manager of the Michelin Tire Co.

Augusta, Ga.—Application has been made for a charter for a new concern to be known as the Augusta Motor Co. The new company is to have a capital stock of \$5,000, and will deal in, repair and store motor cars, motor cycles and bicycles.

Wilmington, Del.—A permit has been granted to W. D. Haddock & Co. for the erection of a garage for the Wilmington Automobile Co., on Tenth street, between Orange and Tatnall streets. The new garage will be 83.3 by 37 feet, two stories in height, and will cost \$1,200.

Topeka, Kan.—Paul Mulvane, who has been conducting a garage and repair business at Seventh and Quincey streets, has sold out to Terry Stafford. Mr. Stafford has been acting as superintendent of the Smith Automobile Co. Thomas Dana, formerly in charge of the mechanical department of the Smith company, is to be associated with Stafford. Mulvane will continue his tire and supply business at the old place.